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Oct 3/51
Vol 15



The Province of Alberta

PETROLEUM AND NATURAL GAS CONSERVATION BOARD

IN THE MATTER OF THE GAS RESOURCES PRESERVATION ACT

AND IN THE MATTER of a Joint Hearing to determine various questions
relating to the proposed Export of Natural Gas from the Province of Alberta.

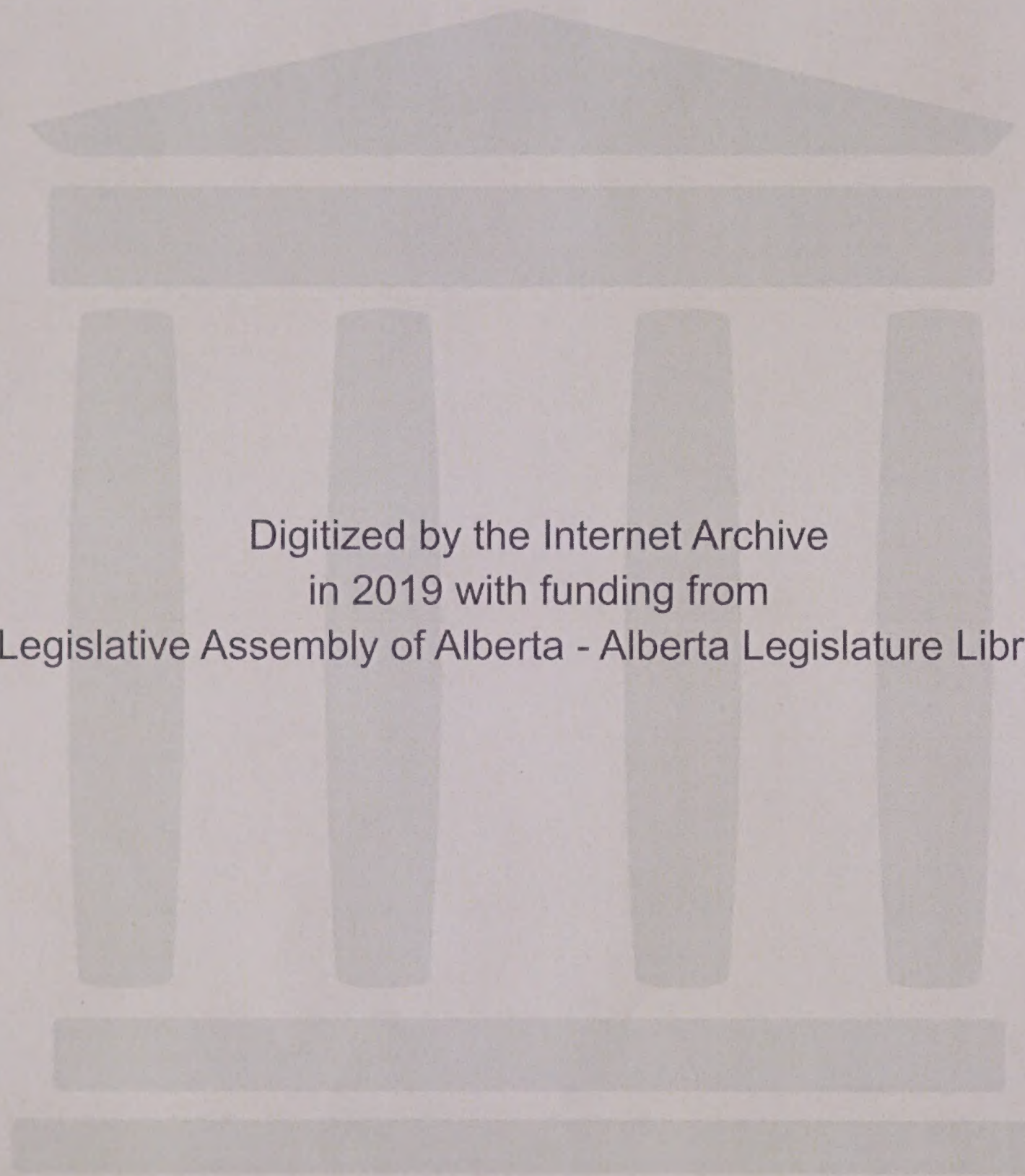
I. N. McKinnon Esq., Chairman

D. P. Goodall Esq.

Dr. G. W. Govier

Session: October 3rd, 1951.

Volume 15.



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I N D E X

VOLUME 15.

3 October 1951.

W I T N E S S E S

Page

RALPH E. DAVIS

Direct Examination by Mr. Steer,.....	1240
Cross-Examination by Mr. McDonald,.....	1246
Cross-Examination by Mr. S.B. Smith,.....	1250
Cross-Examination by Mr. Porter,.....	1276
Cross-Examination by Mr. Bredin,.....	1320
Cross-Examination by Mr. McDonald,.....	1330
Cross-Examination by Mr. S.B. Smith,.....	1332
Examination by Mr. C.E. Smith,.....	1333
Examination by Dr. Govier,.....	1342
Direct Examination by Mr. Steer,.....	1356

.....

[illegible]

R. E. Davis,
Dir. Ex. by Mr. Steer

- 1240 -

VOLUME 15.

October 3rd, 1951.

MR. STEER: I have just two other points,
if the Board pleases, that I would like to ask Mr. Davis
a question or two about.

THE CHAIRMAN: Yes, all right.

.....

RALPH E. DAVIS, already sworn,
examined by Mr. Steer, testified as follows:-

Q Mr. Davis, you are familiar with the drilling that was
done by Northwestern Utilities Limited in the Legal area?

A Yes.

Q Will you tell the Board about that?

A Some months ago the Northwestern Utilities Limited took
what I would call a farm-out from Imperial Oil on a,
I forget, 12 or 15 sections, including the 2 sections
on which the Imperial had drilled Imperial-Kinsella's 1
and 2.

Q Imperial-Legal.

A I am sorry, Imperial-Legal 1 and 2. At the time we
took the farm-out, we had all information that Imperial
had regarding those two wells. We believed the sand to
be some 10, 11 or 12 feet in thickness, and that was
corroborated by Mr. Dougherty's investigation, and the
Imperial-Legal No. 1 had shown a drillstem test from
2471 to 2514 in the Viking sand of 3,290,000. I should
have said from 2471 to 2514, 3,290,000. And from
2518 to 2527 a drillstem test of 1,780,000. Another
drillstem test still deeper showed a very slight flow
of gas.

Mr. E. J. Davis
Mr. E. J. Davis

- 1249 -

Page 12

Exhibit No. 12

Mr. Davis: I have just two other points, if the Board please, that I would like to ask Mr. Davis a question or two about.
THE CHAIRMAN: Yes, all right.

MR. E. J. DAVIS: already answered.

Examined by Mr. Davis, recalled as follows:-

Q Mr. Davis, you are familiar with the drilling that was done by Northwestern Utilities Limited in the local area?

A Yes.

Q Will you tell the Board about that?

A Some months ago the Northwestern Utilities Limited took

what I would call a farm-out from Imperial Oil on a

I forget, 12 or 13 sections, including the 2 sections

on which the Imperial had drilled Imperial-Kinsella's

and 2.

Imperial-legal.

A I am sorry, Imperial-legal 1 and 2. At the time we

took the farm-out, we had all information that Imperial

had regarding these two wells. We believed the sand to

be some 10, 11 or 12 feet in thickness, and that was

corroborated by Mr. Bonsherry's investigation, and the

Imperial-legal No. 1 had shown a brilliant test from

2471 to 2511 in the Viking sand of 3,250,000. I should

have said from 2471 to 2511, 3,250,000. And from

2512 to 2527 a brilliant test of 1,750,000. Another

drill test still deeper showed a very slight flow

of gas.

R. E. Davis,
Dir.Ex. by Mr. Steer.

- 1241 -

In the Basal Quartz in that well there was no gas on drillstem tests. It was standing as a potential gas well with $5\frac{1}{2}$ inch casing cemented in the hole.

Imperial-Legal No. 2 had a drillstem test from 2557 $\frac{1}{2}$ to 2571 in the Viking sand, and got 5,050,000 per day. And a deeper test from 2572 $\frac{1}{2}$ to 2588, a small flow of gas, only some 230,000 to 570,000. This well recovered a little salt water in the last test. And no gas had been obtained in tests in the Basal Cretaceous, which had been tested. This well had been abandoned and all casing pulled that was possible.

To the south of these two wells Imperial-Waybrook N.. 1 had shown a drillstem test in the Viking sand from 2623 to 2679 of 2,048,000. From 2684 to 2697 it showed 7,000,000, and from 2692 to 2717, still in the Viking section, a pop of gas only. Then in the Basal Cretaceous from 3340 to 3363 a test of 4,997,000. And deeper, of 3363 to 3373, got some additional gas, about 1 $\frac{1}{2}$ million, with salt water, and further deeper in the hole got only salt water. This well was completed as an observation well in the D-3 to keep track of the pressure, the effect on pressures this far distant from the nearby Redwater field.

The Northwestern Utilities took a farm-out surrounding these wells, and drilled Northwestern Utilities Limited Legal No. 1. That well was drilled in August of 1951. The well was drilled about a mile and a half northeast of the Waybrook well that

W. E. Davis
Geology of the ...

- 121 -

In the basal ...

well there was no gas on ...
standing as a ...
comment in the ...

Imperial ...

drilled ...
and got ...
to ...
57,000. This well recovered a little ...
the last test. And no gas had been ...
in the basal ...
well had been ...
possible.

To the south of these two wells

Imperial ...
Viking ...
to ...
still in the Viking ...
the basal ...
and deeper, of ...
about 1 1/2 million, with ...
the hole got only ...
as an observation well ...
pressure, the effect on ...
the nearby ...

The ...

a ...
western ...
drilled in August ...
a mile and a half ...

R. E. Davis,
Dir. Ex. by Mr. Steer.

- 1242 -

I have just mentioned, and about a mile and three-quarters south and east of the Imperial-Legal No. 2. A drillstem test of the Viking . . .

Q Perhaps you had better give the location of the well, Mr. Davis?

A Yes, it is in the southwest quarter of the . . .

Q 4-58?

A . . . of Section 4, Town. 58, Range 24, West of the 4th Meridian.

Q Yes?

A A drillstem test in the Viking sand - I might say first that this well, according to our interpretation of the core, etc., indicated only about $2\frac{1}{2}$ feet of Viking sand. A drillstem test in the interval from .2547 to 2559 gave $2\frac{1}{2}$ million feet per day, with a flowing pressure of 625 pounds. And in the interval from 2587 to 2625, a gas flow of only 105,000 feet per day.

In the Basal Cretaceous, which was tested, 350,000 per day was obtained on the drillstem test from the interval 3265 to 3300, the gas containing a very small amount of hydrogen sulphide, about $1\text{-}8/10$ grains per cubic foot. Other tests in the Basal sand gave no gas, only water. A subsequent back-pressure test, run by Northwestern Utilities Limited on this well that was completed in the Viking sand, gave an open flow of $4\text{-}7/10$ million cubic feet per day, and that was interpreted by extrapolating a back-pressure test. We believe it would be on a 10-day sustained open flow about $3\text{-}4/10$ millions per day.

The Northwestern Utilities Legal

W. E. Davis
Dr. Ex. by Mr. Baker

- 1845 -

I have just mentioned, and about a mile and three-quarters
south and east of the Imperial-legal No. 5. A drill-

stem test of the Viking . . .

Perhaps you had better give the location of the well.

Mr. Davis?

Yes, it is in the southern quarter of the . . .

4-250

. . . of Section 4, Town 24, Range 2A, West of the 4th
Meridian.

Yes?

A drillstem test in the Viking sand - I might say first

that this well, according to our interpretation of the
logs, etc., indicated only about 1 1/2 feet of Viking sand.

A drillstem test in the interval from 2527 to 2550

gave us a bottom hole test log, with a flowing pressure of

625 pounds. And in the interval from 2527 to 2552, a

gas flow of only 105,000 feet per day.

In the basal gypsiferous, which

was tested, 150,000 feet per day was obtained on the drillstem

test from the interval 3200 to 3205. The gas containing a

very small amount of hydrogen sulphide, about 1-2/10

grains per cubic foot. Other gases in the basal sand

gave us gas, only water. A subsequent back-pressure

test, run by Northwestern Utilities limited on this well

that was completed in the Viking sand, gave an open flow

of 4-7/10 million cubic feet per day, and that was inter-

rupted by extraneous gas. We believe

it would be an all-day sustained open flow about 3-4/10

million per day.

The Northwestern Utilities legal

R. E. Davis,
Dir. Ex. by Mr. Steer

- 1243 -

No. 2 was located in the same section, directly north of Imperial Legal No. 2, and in the centre of that section.

Q That is in section?

A Section 20 of 58-24, West of 4.

Q Yes?

A A drillstem test gave $2\frac{1}{2}$ million cubic feet in the Viking sand, at the interval from 2530 to 2541, but the flowing pressure was only .300 pounds. Drillstem tests in the Basal Cretaceous gave only salt water. The well was completed in the Viking, and a back-ressure test was attempted on September 27th, 1951. A complete test could not, however, be obtained since the back pressure of the well had dropped to 285 pounds after flowing for 1 hour through a half-inch choke. On September 29th, closed pressure on this well had recovered to only $525\frac{1}{2}$ pounds gauge pressure. The closed pressure of Legal No. 1 was $743\frac{1}{10}$ pounds gauge pressure.

Q Now, you have told us that the pay sand in No. 1 had some $2\frac{1}{2}$ feet?

A 2 or $2\frac{1}{2}$ feet. And in the second well the pay sand seemed to be thicker. It is hard to determine two wells because cores are not, as you well know, we do not have a complete recovery, but we estimate the pay in the second well to be somewhere from 2 to 4 feet.

Now, my purpose in wanting the Board to know of this effort by Northwestern Utilities Limited to increase its gas reserve position, the Company's gas availability position, is to give it to the Board for what it is worth. We do not find it easy to secure parti-

R.E.Davis,
Dir.Ex. by Mr. Steer

- 1244 -

culars in the region of Edmonton. This is one that we were able to obtain and we have committed ourselves to the drilling of four wells. The third well is now near completion. I think it is coring today, but I have no report on it. The problem of Northwestern Utilities, if they are thinking of a 30-year supply, cannot be surely solved by these little minor gas accumulations. Something bigger and better must be discovered, or they will have to go some distance.

Q Now, will you deal with the suggestion that to promote deliverability from Turner Valley an additional 57 wells should be drilled in that area?

A I will do that. I think the Board is well able to judge that without my help, but inasmuch as, I will say, a serious study as presented by DeGolyer & MacNaughton in which they proposed 57 new wells to be drilled into the gas cap of the Turner Valley field, looking at it from the standpoint of economics, you will recall that Mr. Dougherty, of DeGolyer & MacNaughton, estimated the recoverable gas cap reserves at 325 billion. There are at this time about 95, I believe 95 wells, in the gas cap area. If we were to drill another 57 wells, that would make a total of 152 wells to produce 325 billion feet, and that would be an average of 2,138,000,000 feet per well. Now, if those wells were to be drilled by the present owners of the field, they might expect to receive, under anything that we know of now, about $4\frac{3}{4}$ cents for gas, we will say, at the top of the well. I will call it 5 cents. And that would mean an income from gas sales of \$106,900.00 from the average well. Then this operator would also receive,

R. E. Davis,
Dir. Ex. by Mr. Steer

- 1245 -

I think, on the present basis that is in effect, 32% of any liquids recovered in the Madison plant. The gas from the gas cap is now, as I understand it, recovering about 20 barrels per million feet of gas. 32% of 20 barrels would be, oh, roughly, 7 barrels per million feet. And that liquid is selling on today's market at about a little less than \$3.00 a barrel, I think it is \$2.88. Call it \$3.00. That would be \$21.00 per million feet. Well, figuring that out, it comes to a total income from liquids to the well owner of about \$45,000.00, and from gas, as I have just stated, \$106,900.00, or roughly, \$151,000.00 gross income. And when he has paid his royalty, he will have about \$137,000.00 or \$138,000.00. To drill a well, complete it with casing, whatever is needed, the usual wellhead completion, I do not believe we will argue about it, call it \$100,000.00. To operate the well during the years, pay some taxes, I am sure, in my opinion, that the operator would put out about at least \$125,000.00 in well and operations. He would take in about, after royalty payments, but before taxes, about \$138,000.00. I suspect that he would make about \$13,000.00 during the period of the operation, and if it lasted 20 years, that would be \$500.00 or \$600.00 a year on an investment of \$100,000.00.

I do not see that there is more to be said. Such figures as that are interesting in school problems, not in business.

Q hat is all we have, sir.

MR. McDONALD: I have some questions of Mr. Davis,

R. E. Davis,
Cr. Ex, by Mr. McDonald.

- 1246 -

sir.

THE CHAIRMAN: Yes, all right.

.....

CROSS-EXAMINATION BY MR. McDONALD:

Q With reference to the matter of supply for the Alberta deficiency, that is in the Northwestern Utilities, and in the Calgary or Canadian Western system, do you consider, Mr. Davis, that the Peace River gas is a practical source of gas to meet those deficiencies?

A It would be a practical source if it were the only source, and if it were the nearest competent source, but inasmuch as there are other sources substantially closer to Edmonton, I would say that the Northwestern Utilities and the Edmonton people would prefer to build a 200-mile pipe line, or 250-mile pipe line rather than a 300-mile line, if gas could be obtained, the same quality of gas, and on the same price terms and so forth.

(Go to page 1247)

Ralph E. Davis,
Cr. Ex. by Mr. McDonald.

- 1247 -

- A In other words, I frankly look upon the gas of the Peace River area as probably not a suitable source under all the circumstances for the Edmonton system, not the most suitable source.
- Q Now, as I understand it, your study of reserves has been directed more to the southern area of the Province than the Peace River area. You have not made a particular study of the reserves there?
- A I did make a study of it a year and a half ago. At this time I saw no need of going into a study of the Peace River area, it was not a problem to us.
- Q And your evidence then regarding export lines is qualified by that statement, that you have not investigated it lately?
- A My evidence what?
- Q In regard to the export lines, your evidence is qualified by the fact that you have not investigated the Peace River area recently?
- A If it qualifies it in any way. I have been willing for the over-all survey to let those who have studied it state their beliefs. If you add it all up without my having made a study, I still think what I think.
- Q Now, we come to the Calgary system. There was some discussion when Dr. Hetherington was on the stand. What are your views as to the practicability of the present theory of storage in Turner Valley for the purposes of the Canadian Western system?
- A You are asking me what I think of the reasonableness of doing that and doing it now?

Ralph E. Davis,
Cr. Ex. by Mr. McDonald.

- 1248 -

Q Yes, doing it in the next few months?

A I have stated that I believe that major export is not at this time likely to take place. I do not believe we have got the picture available as yet. I do not know why we should be spending our time and other people's money making studies of what might be the way to do it if and when there is a time to do it. Frankly, I think that if and when export develops that the Canadian Western Company will have found it desirable to have secured unto itself a sufficient supply so that there will be no argument about it, and that they will endeavour to make some arrangement with the owners in Turner Valley to use Turner Valley for storage. I do not believe any study at this time would add to anybody's ability to do anything. It would just be some more work, some more figures, some more money for somebody and no results.

Q Similarly there was a discussion as to the economics of a pipeline from Pincher Creek and the additions required for the Canadian Western system and the effect on the Canadian Western rate base, the ultimate effect of new installations on consumers' price. Do you think it would be justified at this time to make a thorough investigation of that particular phase of it?

A If you are planning to pay for it, it would be all right with me. I would not advise my clients to spend 20 cents on it. We do not need it now. We do not know that there is enough gas, in my opinion, to be too serious about this plan. Why then should the Canadian Western Company get into a money-making spree, making a lot of pencil figures. They will make those when they need to.

Ralph E. Davis,
Cr. Ex. by Mr. McDonald.

- 1249 -

Q Those costs, in order to do that, would call for a forecast of the rate base of the Canadian Western Company?

A If you did the job you would come out with figures showing that in 1958 or 1956 or 1960 Canadian Western would have to add to its rate base something presumably between 5 and 10 million dollars. They have already gone over it hurriedly and see those figures available. What is the use of finding out if it is going to be 5 million 600 thousand or 6 million 500 thousand? What difference does it make to it?

Q If the expenditure has to be made the company will make it?

A They will make it if they are in on the spending.

Q Then, in your examination yesterday, you referred to a modest capacity of a proposed line from Southern Alberta into Montana. You suggested such a line could be financed. You are referring to the Canadian-Montana line?

A That is right.

Q That is already in the course of construction?

A Not to my knowledge. I do not know whether it is under construction or not.

Q You do not know whether it is or not?

A No. I know they hope to build it immediately.

MR. MARTLAND:

I have no questions, sir.

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1250 -

CROSS-EXAMINATION BY MR. S.B. SMITH:

Q Mr. Davis, I think you said yesterday that you did not feel secure in respect of either the Calgary or Edmonton companies at the present time. In effect you said that?

A I think I did.

Q And I think you said about the same thing a year ago?

A I do not remember it. I should have if I did not.

Q And you said a year ago that to meet the estimated annual and peak requirements of the Northwestern Company of 1980 you estimated that you would need additional reserves of 500 billion, do you remember that?

A Yes. I recall that, and you will grant, I believe, that I was assuming that Northwestern Utilities Limited would be able to secure the purchase rights to the Leduc gas cap gas.

Q Yes?

A Over and above the gas they now control, and the Leduc field which is, in, I will say, their front yard. They have this 500 or 600 billion feet which is not under present purchase contract, but giving them that, then I estimate that another 500 billion would be needed to see them through the year 1980 on the basis of the estimated growth in the markets.

Q And you also said last year, and this is your language I am reading to you:

"It would seem to me that with this program of exploration going on and with the prospect of success that it would not be necessary for Northwestern to go rushing into a deal in December

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1251 -

"1950. I personally would be inclined to see what happens through the country, see if they do not find another good gas cap somewhere."

You remember saying that?

A I am sure.

Q Is that still your position?

A My position has come to be this, whenever I said that -- you say about a year ago?

Q Well, you said that on October 31st, 1950, just about a year ago.

A All right. At that time I did not think export on a large scale could possibly become a reality within several years. That was my opinion a year ago.

Q You are saying that almost today, too, aren't you?

A Well, I will say that when I get to that.

Q You do not mind me asking you, Mr. Davis?

A I don't mind you asking me anything but I wish you would let me have my say.

Q Yes, go right ahead, take all the time you like.

A My feeling a year ago was that export was so distant Northwestern Utilities did not have to do any frank contracting for gas but this thing keeps on boiling, newspapers keep on talking about how much gas there is, and everybody seems to think there is an enormous reserve here sufficient for export, and I think myself that if Northwestern Utilities had a good opportunity today to take some stuff on they would not be too serious in the matter of rates for gas, I would say, "let's do it".

Q Well, you are not saying really that because of the news-

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1252 -

papers publishing statements about large reserves that that factor alone would cause Northwestern to want to make contracts for additional gas when last year you did not?

A I thought this hue and cry about building long distance lines would kind of die down a little bit at the time of the last Hearing last year. Instead of that it gets hotter and hotter.

Q Would you say it is a newspaper hue and cry?

A Not only that, you are here for making yourself known in the hue and the cry.

Q Yes. And you are in the hue and cry to a certain extent, aren't you, Mr. Davis?

A You give me credit for being that.

Q Now, so far as Calgary is concerned, last year you said that you would require, in your estimation, about 750 billion cubic feet to carry you through to 1980 but that you might be satisfied with less than that, perhaps 500 billion. You recall that?

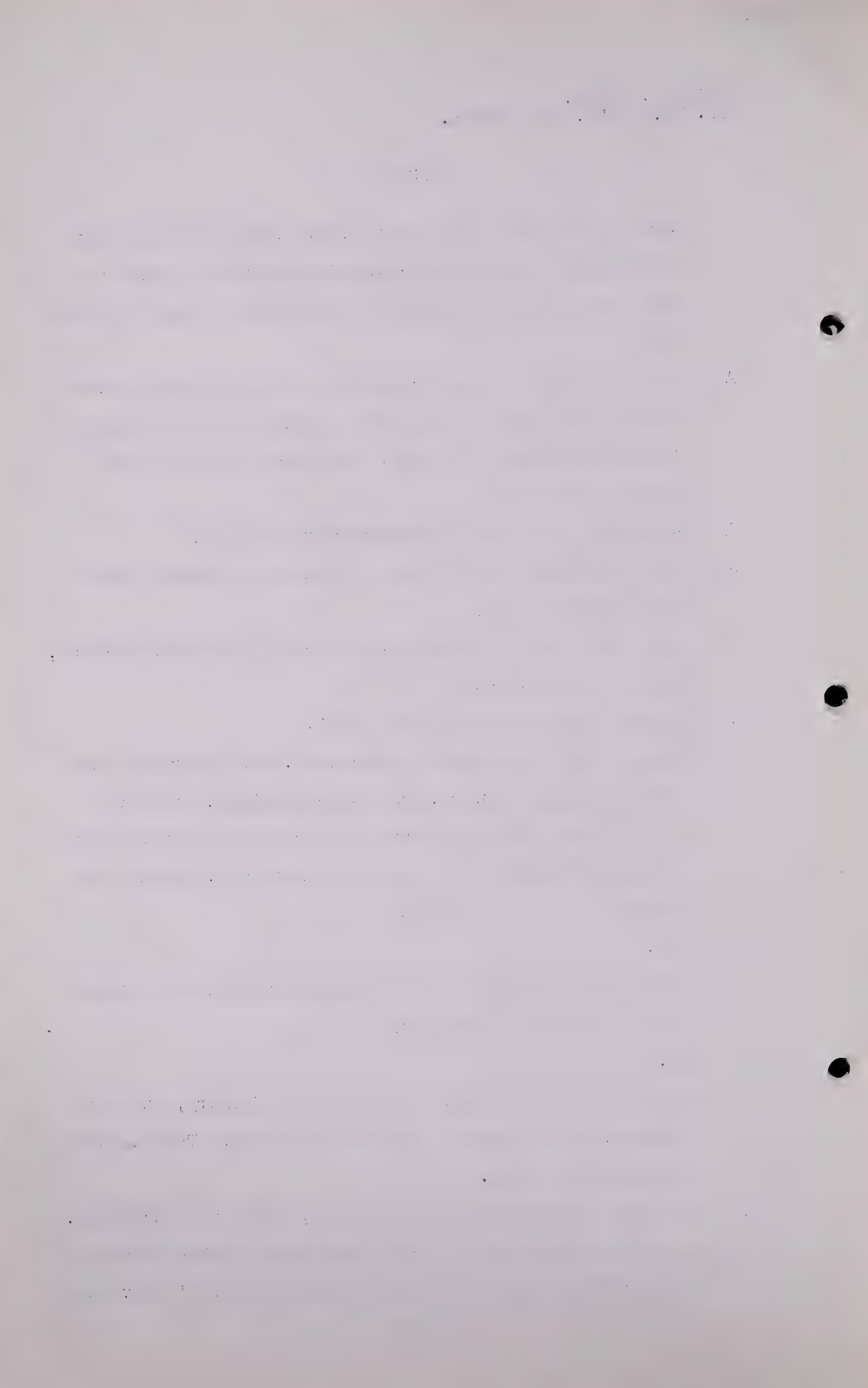
A Yes.

Q And you have not got any of that additional 500 billion yet for the City of Calgary?

A No.

Q But you do have adequate supplies for Calgary, in your opinion, for perhaps 11 or 12 years ahead? That is what you said last year.

A We have adequate supplies on paper, and I hope actually, but it is only about 8 or 10 days ago that the plant in Turner Valley had some trouble and were able to give us



Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1253 -

65 million a day instead of more, and at the same time the Shell plant at Jumping Pound went down for five days or more and the Canadian Western were supplying their market during that last cold spell taking 29 million feet a day out of Bow Island. If it had not been for that little storage reserve down there there would have been a lot of industries shut off in Calgary during the past ten days, or during one or more days. This thing of a city of size depending upon its major gas supplies from these plants that process the gas, and especially gas that is heavy in sulphur, I say on estimated reserves Calgary ought to be able to get along all right if the Madison Royalite set-up can live up to their expectations and my expectations and if the Shell Company will increase its plant at Jumping Pound to the extent required, and those matters are matters that are under discussion between these companies.

Q Mr. Davis, your language, and I am reading from page 46 of volume 1 on October 30th, 1950, under the heading: "Conclusions", and this is your language:

"It is evident that the present sources of supply..." you are speaking of Calgary here,

"....will be inadequate to meet the system requirements for more than about 10 or 12 years."

You did say that?

A I think that is right.

Q And that was in your formal written report last year that you read here?

A That is all right.

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1254 -

Q Last year you expressed the thought on the witness stand that perhaps Calgary might be able to get your gas, some of it, perhaps from Pakowki Lake or Pincher Creek. You recall saying that?

A Yes.

Q But Pincher Creek, I think you have made very clear, both last year, particularly last year and to some extent this year, is really not attractive or desirable for the Calgary system as something else more suitable might be because of the distance from Calgary and the high capital cost and the high operating costs?

A That is true. The more distant the field the less attractive.

Q Because you spoke of a shortage for the City of Calgary. If you had the opportunity today of making an arrangement for the Calgary system with regard to the Pincher Creek field, I think it is quite clear from your evidence that you would not recommend that to the Calgary system, would you? That is the effect of your evidence, isn't it?

A Well, let me answer. It would depend upon what kind of a deal I could make. If I had to make a deal that meant an immediate increase in the price to Calgary of 3 or 4 cents, I would say that was not wise.

Q Wouldn't it mean an increase if you made a deal for Pincher Creek?

A It depends on what kind of a deal I made.

Q You would expect to increase the price of gas?

A Well, deals are made sometimes -- Manufacturers Light and Heat Company made a deal to buy as much gas as they

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1255 -

would like to take up to 100 million feet a day for 100 years and pay for it when they took it. If I could make a deal with Gulf --

Q Like that?

A -- of something along that line I would be inclined to consider it seriously, but also keep in mind what might happen at Olds or Mackid, the field south of here. We do not want to go to Pincher Creek.

Q Unless you have to?

A Unless we have to, and we do not like to spend money for the privilege any sooner than we have to, and we do not like to take it out of there until we know we were not going to get gas.

Q You would not like to carry on unconnected for many years, either, would you?

A At large costs I would not want to.

Q No, but there is always the possibility of development of Pincher possibly on an export basis in a limited amount in which event some gas might be made available to the City of Calgary at a reasonable price. That is at least a distinct possibility?

A I see the possibility of Gulf doing that thing that yesterday I said would firm up the proof of the reserves and a limited amount of gas could be taken out of that field if the Calgary situation were properly safeguarded, if this situation is safeguarded and if they do have $1\frac{1}{4}$ trillion of marketable clean gas.

Q And you think they probably have more than that? You think they probably have?

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1256 -

A I think that they could have.

Q Yes, between 1 and 2 trillion, you said yesterday, probably?

A I think so. Well, now, which is it, 1.1 or 1.9? I do not know and they do not know. They do not know and I do not know.

Q At the moment you are not prepared to say. There are men here who are prepared to say.

A I will grant that they said all right.

Q Yes, they said.

A That ends that.

Q Now, Mr. Davis, you would agree, I think, that it is best for everyone, I am giving you your own language from last year, if we can get export assuming there is enough gas for Alberta?

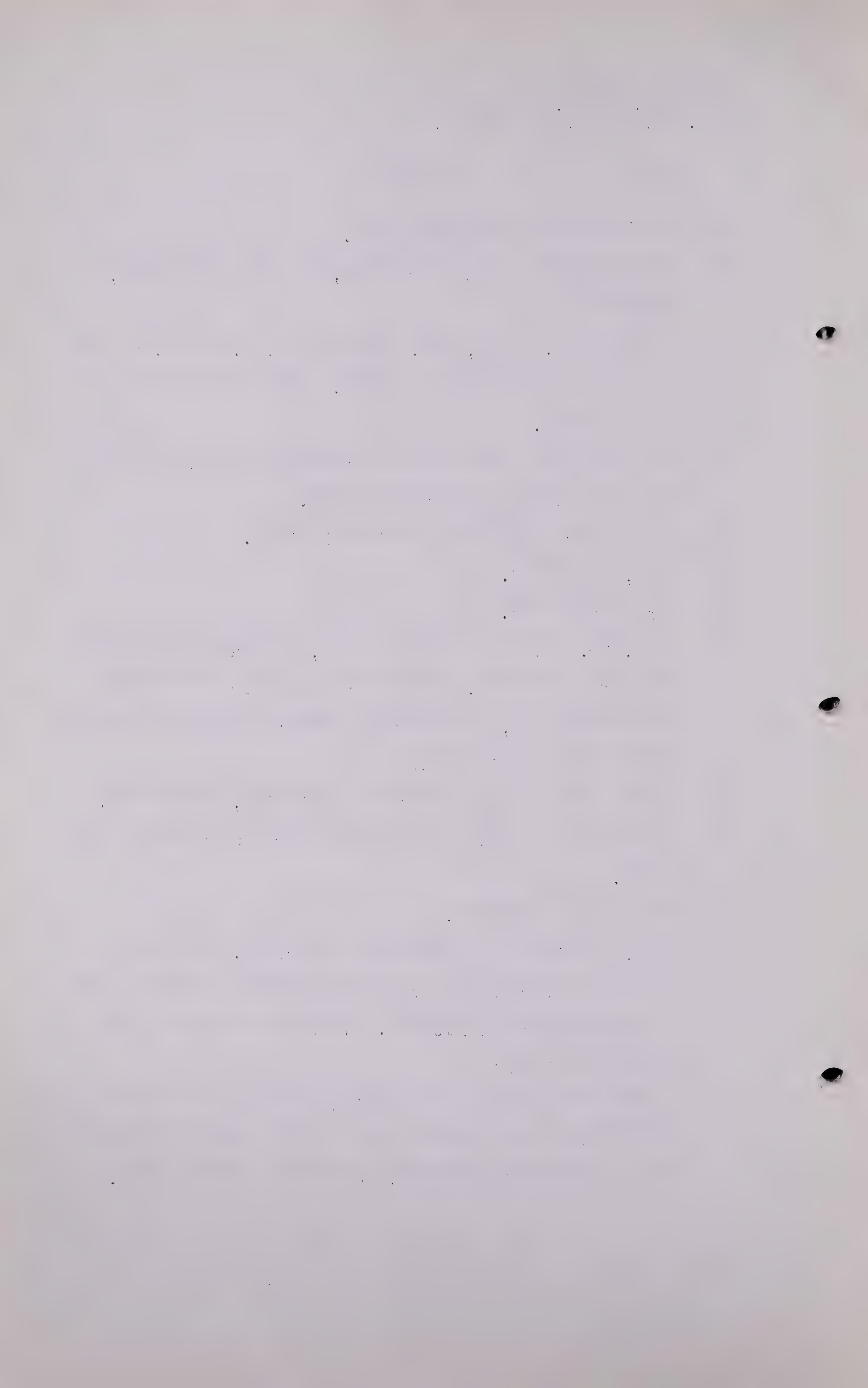
A I was laughing and I was not listening, I am sorry.

Q I am going to give you some of your own language last year.

A It is good language.

Q Yes, I think it is perfectly all right. That it is best for everyone if we can get export assuming there is enough gas for Alberta. Would you agree on that statement today?

A I say that if there be a suitable supply for Alberta that then it is a good thing to have export if there be an exportable surplus. Certainly I think that.



R. E. Davis,
Cr. Ex. by Mr. S. B. Smith

- 1257 -

Q Now, Mr. Davis, Edmonton at the present time, as I understand it, is entirely dependent on Viking-Kinsella and Leduc for its gas supplies?

A Yes.

Q That is where you take all your gas from?

A Yes.

Q And Calgary is at the present time dependent on Turner Valley, Jumping Pound, Foremost and Bow Island, I think?

A Yes.

Q What one of those six fields, what ones of those six fields have been found, that is explored, found and developed by the Calgary and Edmonton Gas Companies?

A Well, it seems to me that since some of this happened before my time up here, that the people who formed the Gas Company, Canadian Western Company, explored for gas and had found . . .

Q Bow Island?

A Yes, Bow Island.

Q Yes?

A And they found Bow Island and they put gas into Calgary, and I believe the people that found gas at Viking back about 1918 or '20?

Q Yes?

A They worked on that scheme. . .

Q And they put gas into Edmonton?

A And they put gas into Edmonton.

Q Yes?

A And the extension of the field to the east, they had a great deal to do with that.

Q Yes, quite right.

R. E. Davis,
Cr. Ex. by Mr. S. B. Smith.

- 1258 -

A And after that Canadian Western Company found Foremost.

Q And Jumping Pound was found by Shell??

A By Shell.

Q And the Turner Valley by, I do not know.

A Royalite.

Q Royalite, I suppose?

A Yes, drilling into the Madison.

Q And Leduc by Imperial Oil?

A That is right.

Q If Imperial had not found Leduc, if Royalite had not found Turner Valley, and Shell had not found Jumping Pound, where would the Calgary and Edmonton gas companies have stood today, so far as gas supplies are concerned, if they had not explored and found gas themselves, as they have not done?

A And assuming that nobody else had?

Q And assuming that nobody else had?

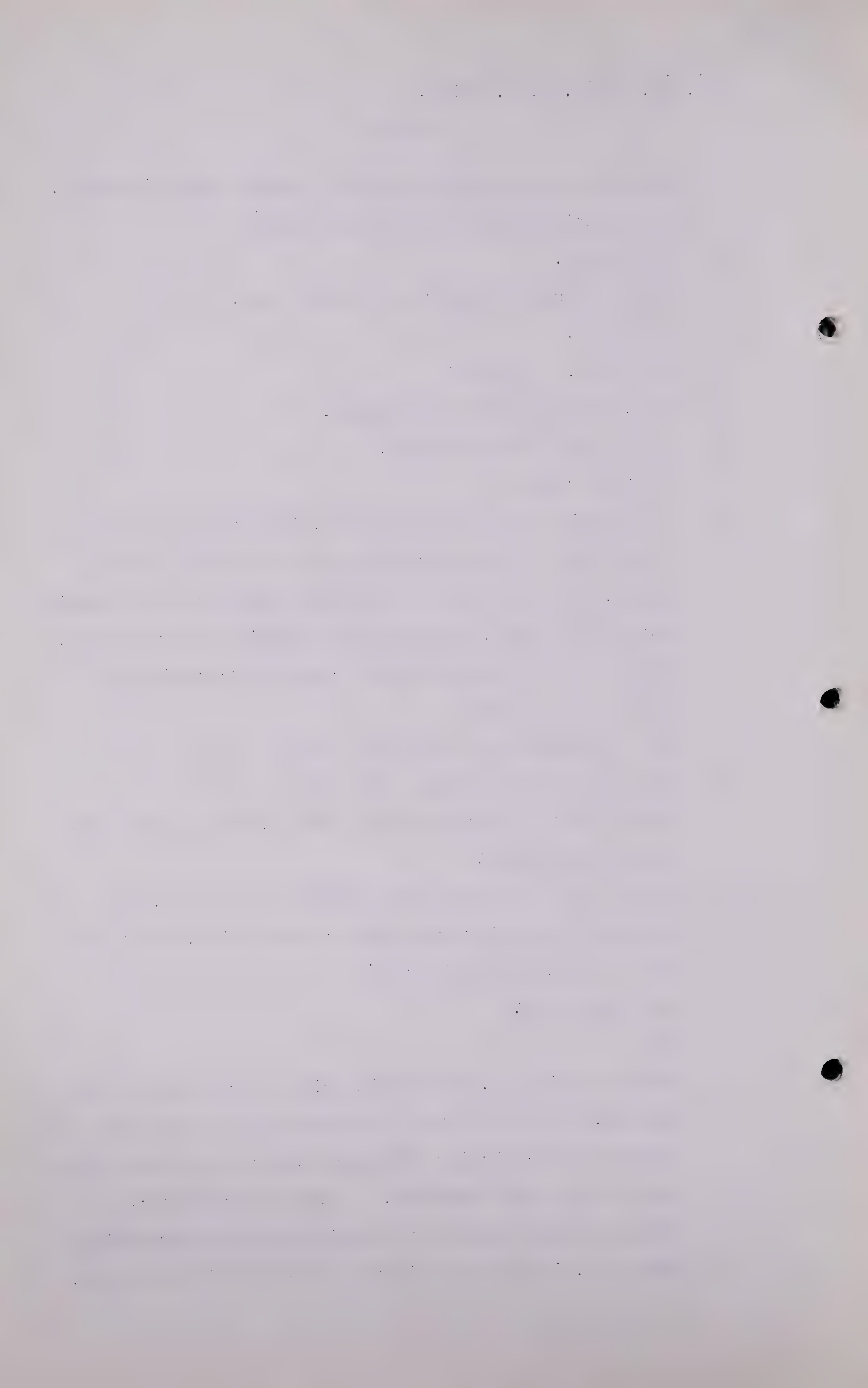
A If they did not explore after 1925 and nobody else explored after 1925?

Q Nobody else was in the gas business in Alberta, the business of selling gas either at that time, isn't that so? I mean, in a major way?

A In a major way?

Q Yes?

A You are asking me, and getting right down to practical matters, I do not see that the discovery of Leduc has as yet, had any particular influence upon the present deliveries of gas into Edmonton. I guess Northwestern Utilities would right now be doing what they are doing right now, if Imperial Oil had never been in the world.



R. E. Davis,
Cr. Ex. by Mr. S. B. Smith.

- 1259 -

Q That may be. You would be using Viking-Kinsella gas?

A Well, let me ask you . . .

Q I am, at the moment, asking you questions, Mr. Davis,
and you are trying to answer them?

A You are asking me, and I was going to ask you if you could
help me.

Q I will help you if I can?

A I am telling you that Northwestern Utilities and the
Calgary Gas Company would still have gas if Jumping
Pound had never turned up and Leduc had never turned up.

Q But you would not have had additional reserves, and if
Jumping Pound had not been found, the Calgary Gas Company
would have been in an awkward position?

A I cannot tell you that.

Q It is quite obvious?

A I cannot tell you. It might have happened in 1924 or
'25, but it happens that Royalite No. 4 well did
discover deep gas in Turner Valley in the year '23 or '24.
And if that well had not been drilled out there by
Royalite . . .

Q You might have drilled somewhere?

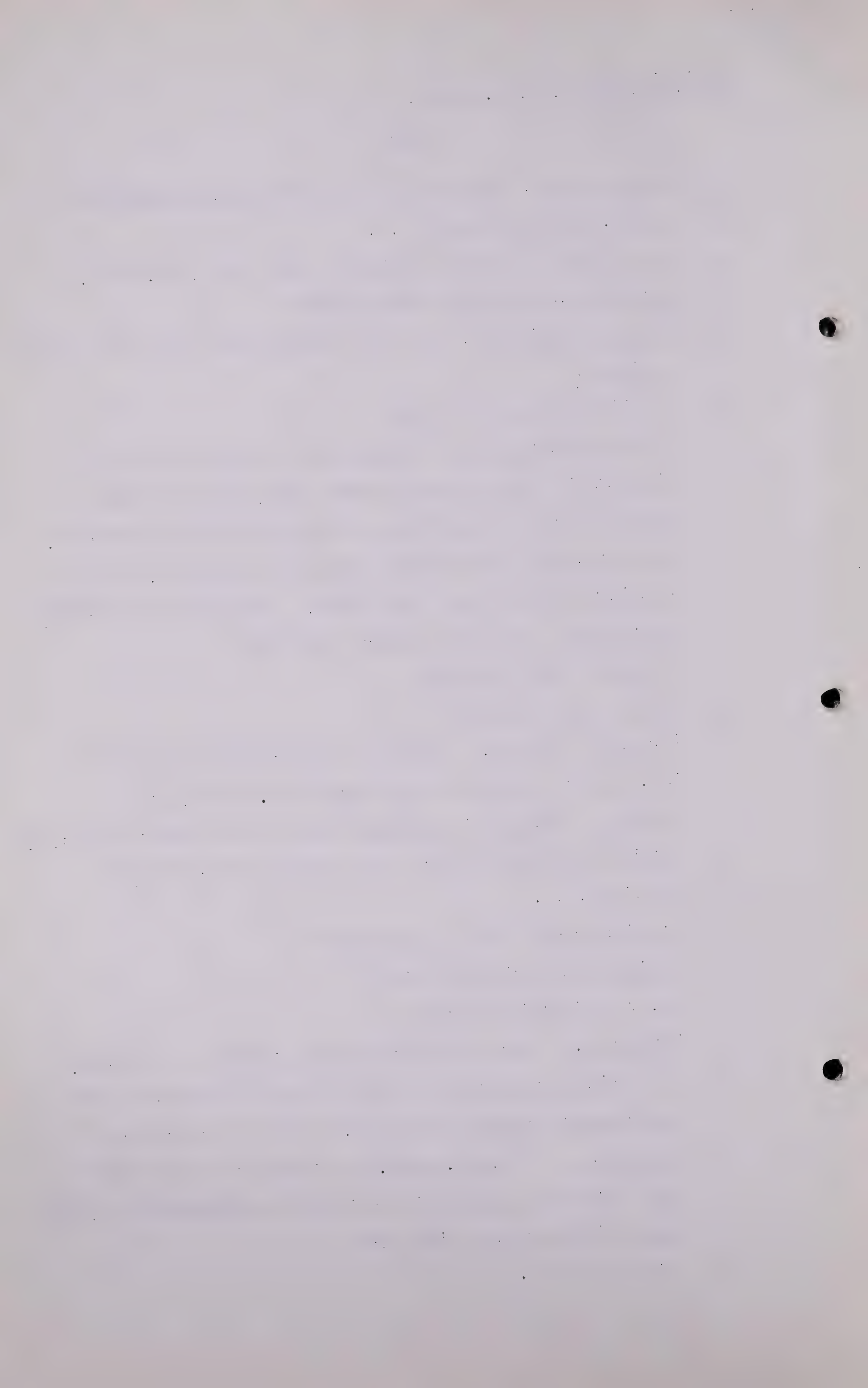
A We might have drilled on it.

Q Yes, you might have drilled?

A Might have. You are asking me what might have happened.

Q I am asking you what the position would have been today
had certain things not occurred. That is a little bit
different. Now, Mr. Davis, I think it is elementary
that you have to have an incentive to promote the develop-
ment of oil or gas, don't you?

A I would think so.



R. E. Davis,
Cr. Ex. by Mr. S. B. Smith.

- 1260 -

Q People in the business are anxious to find oil and gas and sell it, and make money, and that is why they go into it?

A Well, people who are given the opportunity of making money, some of them are willing to go out and explore for oil and gas.

Q Yes. And without the export of gas, is it not fair to say that there is a limited market for gas in Alberta between the present time and 1980, and that market is then limited to what we are likely to consume, what we will consume in the Province of Alberta if we do not export?

A You are asking me if no export be granted?

Q Yes?

A For say, 30 years?

Q Yes?

A In that case there will be a limited market as compared to what export would afford.

Q And there is a limited market for gas so long as there is no export, isn't there? Today there is a limited market, and the limited market today is the market within Alberta?

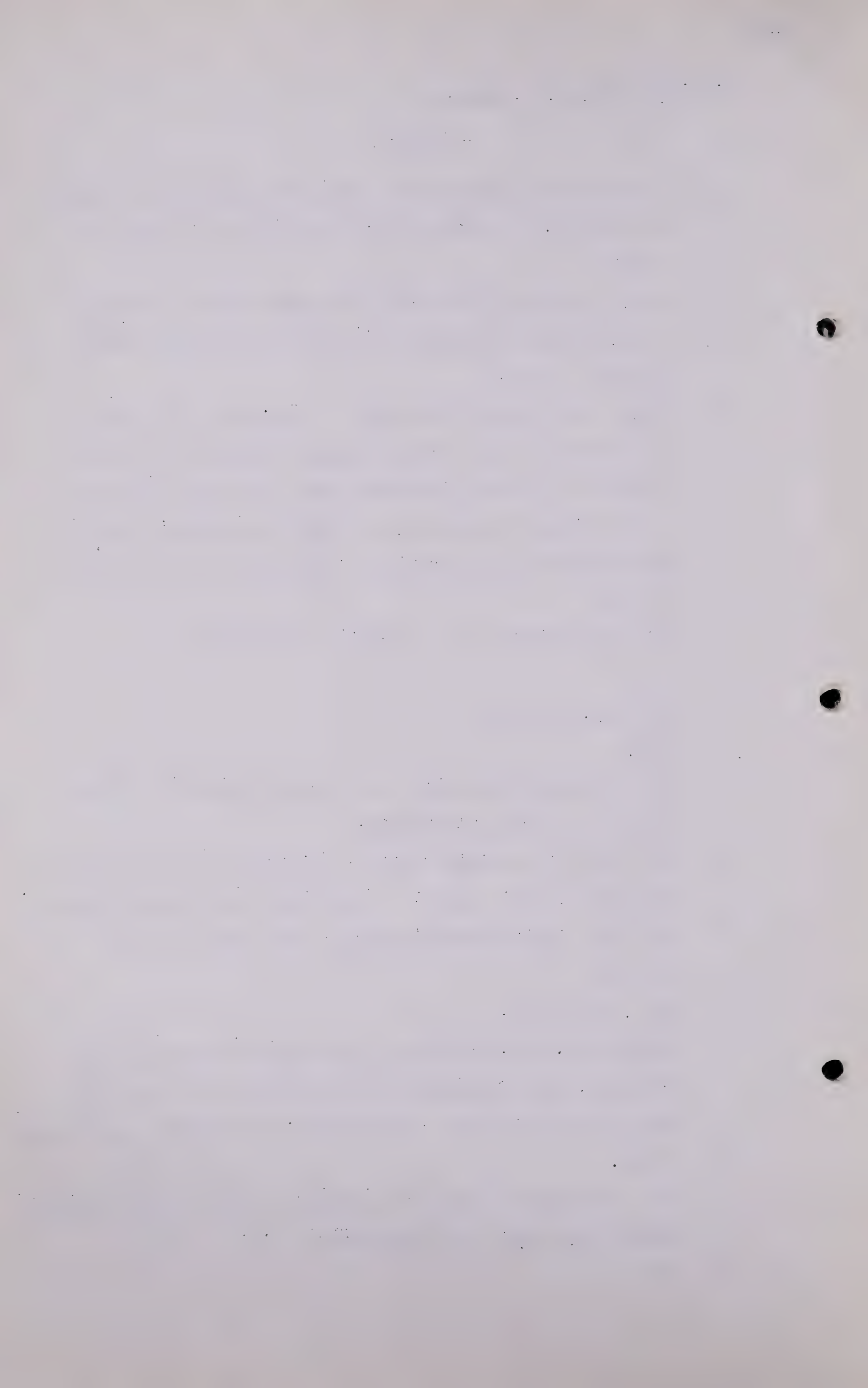
A Why, certainly.

Q Certainly. And, according to the Board's findings last January, the requirements for Alberta for the next 30 years were 3 trillion, 59 billion, you remember that figure?

A I do.

Q And according to the Board's figures as at last January, whether you agree with them or not. . .

A Yes?



R. E. Davis,
Cr. Ex. by Mr. S. B. Smith.

- 1261 -

Q We had in that time in Alberta marketable gas of about 4 trillion, according to the figures?

A That is what I thought.

Q So that there is no much incentive for the drilling of gas within Alberta in the absence of export or prospective export?

A My friend, I may say that we do not have to go clear around the bush to get to the point. . .

Q No?

A Without export there will be a more limited market for gas and, therefore, there won't be so much incentive.

Q So that we are in agreement?

A Why, certainly.

Q You are not here to oppose export, as I understand it?

A I certainly am not.

Q You said that yesterday?

A That is right.

Q And your obligation in your position, as I understood your statement yesterday, is to provide gas for the local utilities and not to look after the export gas?

A I am not employed to help anybody export gas out of here.

Q You are employed to make sure that you get enough gas here for the Calgary and Edmonton Gas Companies, that is your duty and your interest, isn't it?

A Absolutely.

Q Yes?

A Yes, and the Board's duty, by the way, too.

Q Well, I suppose that, perhaps, we can leave it to the Board to decide what their duty is under the Statute. I am quite content to.

R. E. Davis,
Cr. Ex. by Mr. S. B. Smith.

- 1262 -

A The same as you could leave it to me.

MR. C. E. SMITH: The consumer and the companies
are not necessarily synonymous.

MR. S. B. SMITH: I am talking about the companies
at the moment.

MR. C. E. SMITH: I am a consumer.

MR. S. B. SMITH: Well, I am a consumer too.

MR. PORTER: Why don't you leave out the
"necessarily"?

Q MR. S. B. SMITH: Mr. Davis, would you agree with
this statement, or you would agree with this statement,
I think, that if there is sufficient gas for Alberta to
provide for Alberta's needs, then there should be export?

A If there be sufficient gas in Alberta . . .

Q To provide for its future?

A . . . to provide for Alberta's needs. . .

Q Yes?

A . . . then there should be export?

Q Yes?

A Even though there be no more gas whatever for Alberta's
needs?

Q No, I am assuming that there is a surplus over any of
Alberta's needs?

A If there is a sufficient surplus to make the thing
feasible, I would agree with you.

Q Now, I am going to talk to you about that as we go along.
You would not suggest, would you, that once there is
enough gas to provide for Alberta and a surplus, that
the owners of the gas in Alberta should be prohibited from
exporting the surplus just for the purpose of making sure

R.E.Davis,
Cr. Ex. by Mr.S. B.Smith.

- 1263 -

that the local utility companies and the local consumers would have that gas in place as future insurance for them, would you?

A I think I agree with you. I would not be a party to preventing export if the home utilities, the home markets, are suitably protected.

Q Yes?

A Now, after that, as far as I am concerned, if export is suitable . . .

Q Yes?

A It is all right.

Q Yes. If export is prohibited, even if the Calgary and Canadian systems do not acquire additional reserves, they have a kind of insurance as long as there is no export, as then the companies that own the gas cannot sell it, and the only market that would be available is an export market, and you do not care to buy it, it has to lie there, hasn't it?

A I believe that is right.

Q Yes. And in that case the Calgary and Edmonton Gas Company got a kind of insurance which was provided at somebody else's cost, didn't they, at the cost of the companies who drilled the gas wells, and obtained the gas, isn't that so

A It seems to me that there is an insurance so long as the gas is here.

Q Yes. And not exported?

A And not exported.

Q Yes?

A I would think that is insurance.

R. E. Davis.
Cr. Ex. by Mr. S. B. Smith

- 1264 -

Q And that is a pretty good kind of insurance, if you can get it for the Calgary and Edmonton gas companies, if they can get it, not paid for by those companies, that is a good kind of insurance, that kind of insurance, but paid for by oil companies, and that is a good insurance for the Calgary and Edmonton systems, isn't it?

A I would think so.

Q If you can get insurance that does not cost you anything, but somebody else pays for it, it is a nice kind of insurance?

A It is quite nice.

Q Nothing better. And you do not like paying for reserves for the Calgary and Edmonton systems and carrying them unconnected for long periods, Mr. Davis? You have made that plain?

A I think you are mistaken. I have no objection whatever to buying up a large reserve.

Q If it does not cost you much?

A It depends upon the cost.

Q But if you can have reserves lying dormant that cannot be sold except to your systems, that is better still than buying them and carrying them unconnected, isn't it?

A Well, it seems to me that a company like Northwestern Utilities would feel better if they did have a contract arrangement.

Q It is just like money in the bank then?

A Well, not always.

Q Not quite? Did I interrupt you?

A I believe you did.

Q I am sorry.

R. E. Davis,
Cr. Ex. by Mr. S. B. Smith

- 1265 -

A You have got me so disconcerted, I do not know hardly what to say.

Q I am sorry. I apologize for disconcerting you?

A My belief is, and I have talked it over with the management of the Northwestern Utilities often within the week, that if it would be possible to make contracts for additional large reserves, that the Northwestern Utilities should do that, if it be possible to do it on a reasonable business basis.

Q Now, Mr. Davis, isn't this a fact, that you are looking after the interests of the Calgary and Edmonton Gas Companies, and you do not have to worry, in that capacity you do not have to worry about whether some company that wants to export gas can get by the Federal Power Commission and the S.E.C., and can finance its undertaking, do you? That is not your worry, is it?

A It is not my worry.

Q It is their worry, isn't it?

A Yes.

Q Yes, entirely.

A Yes.

Q But you talked about it at some length yesterday. That is the export companies' worry, and if they cannot get past those hurdles, then they cannot export, can they? They have got to get past the Federal Power Commission, if they are going to go to the United States, and they have to get past the S.E.C., and they have got to finance their undertaking, or they cannot export gas, isn't that so?

R. E. Davis,
Cr.Ex. by Mr. S. B. Smith

- 1266 -

A Apparently.

Q Yes. And is not the prohibition of export a happy situation for the Calgary and Edmonton Gas Companies and you as their advisor in this field?

A It is a happy situation so far as the people of Calgary and Edmonton are concerned.

Q Yes? And for the gas companies?

A Let me answer, will you please, Mr. Smith?

Q Certainly.

A You can fill it in if you want to later. And the Gas Company.

Q Yes, all right?

A Now, when you get to me, as their advisor, why is it so happy for me?

Q Well, I am not suggesting it is happy for you personally.

A That is what you said.

Q Well, you are here, and I am talking about the gas companies really that you are appearing here for?

A All right, let us talk about them.

Q I think we understand one another, don't we?

A We do now.

Q We did up to now, too?

A Right now we do.

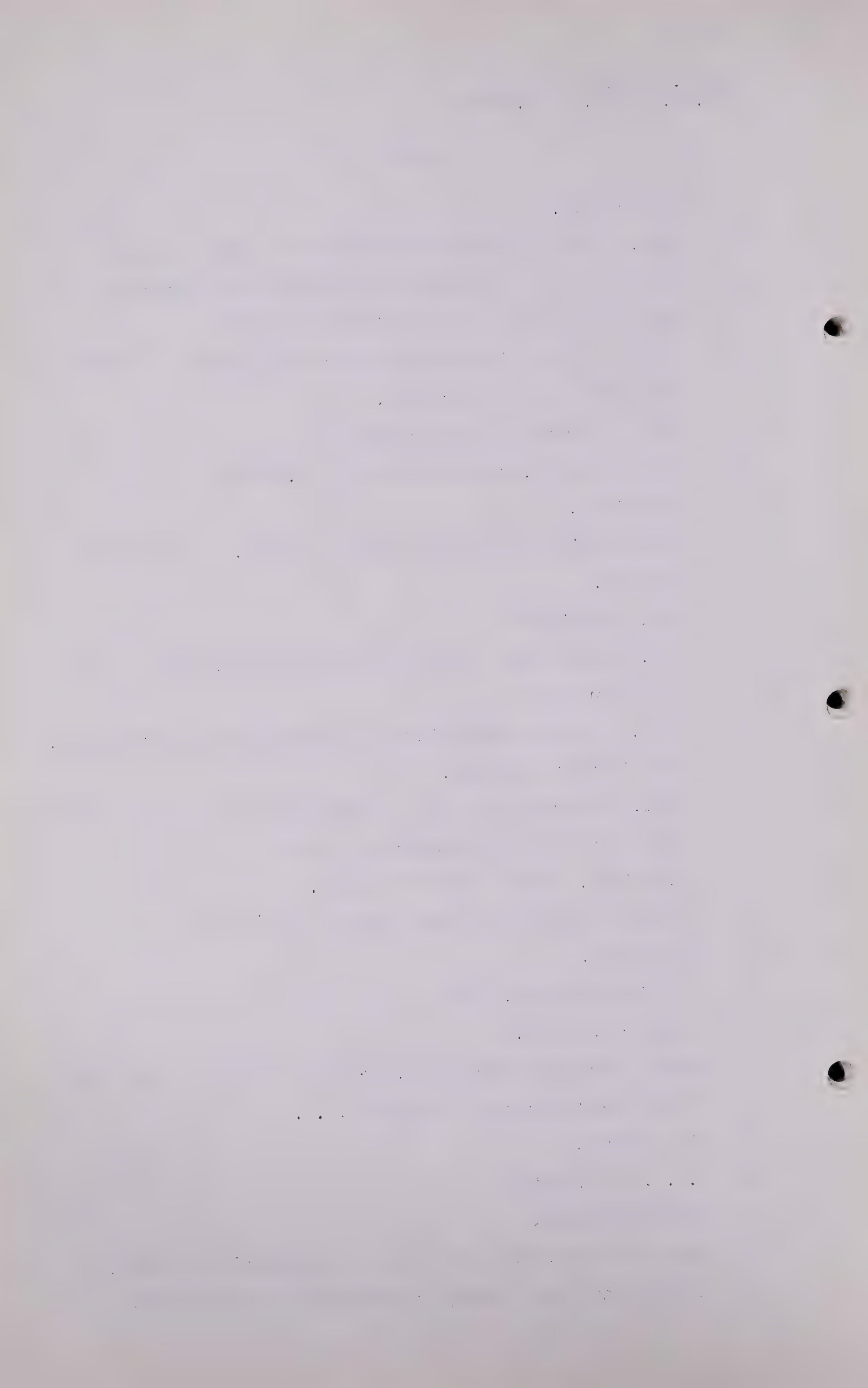
Q And so long as export is precluded I think that the only real market for gas in Alberta . . .

A Is Alberta.

Q . . . is Alberta?

A Why, certainly.

Q And the only people who buy large quantities of gas in Alberta and the Calgary and Edmonton Gas Companies?



R. E. Davis,
Cr. Ex. by Mr. S. B. Smith

- 1267 -

A That is correct.

Q That is a happy position for those companies to be in, isn't it, because if people have gas to sell and there is only one concern to whom they can sell it, that is a pretty limited market, and it is a sort of buyer's market, isn't it?

A I think it is fine for the gas companies and for their public that they serve, that they have the situation that they have, and are not paying 5 cents a thousand more for gas than they are paying.

Q Yes?

A Which I believe might develop.

Q Unless their interests are properly protected?

A If their interests are properly protected, that is what I meant.

Q And that is why we have a Board here, too, Mr. Davis?

A That is right.

Q The Board that we are appearing before?

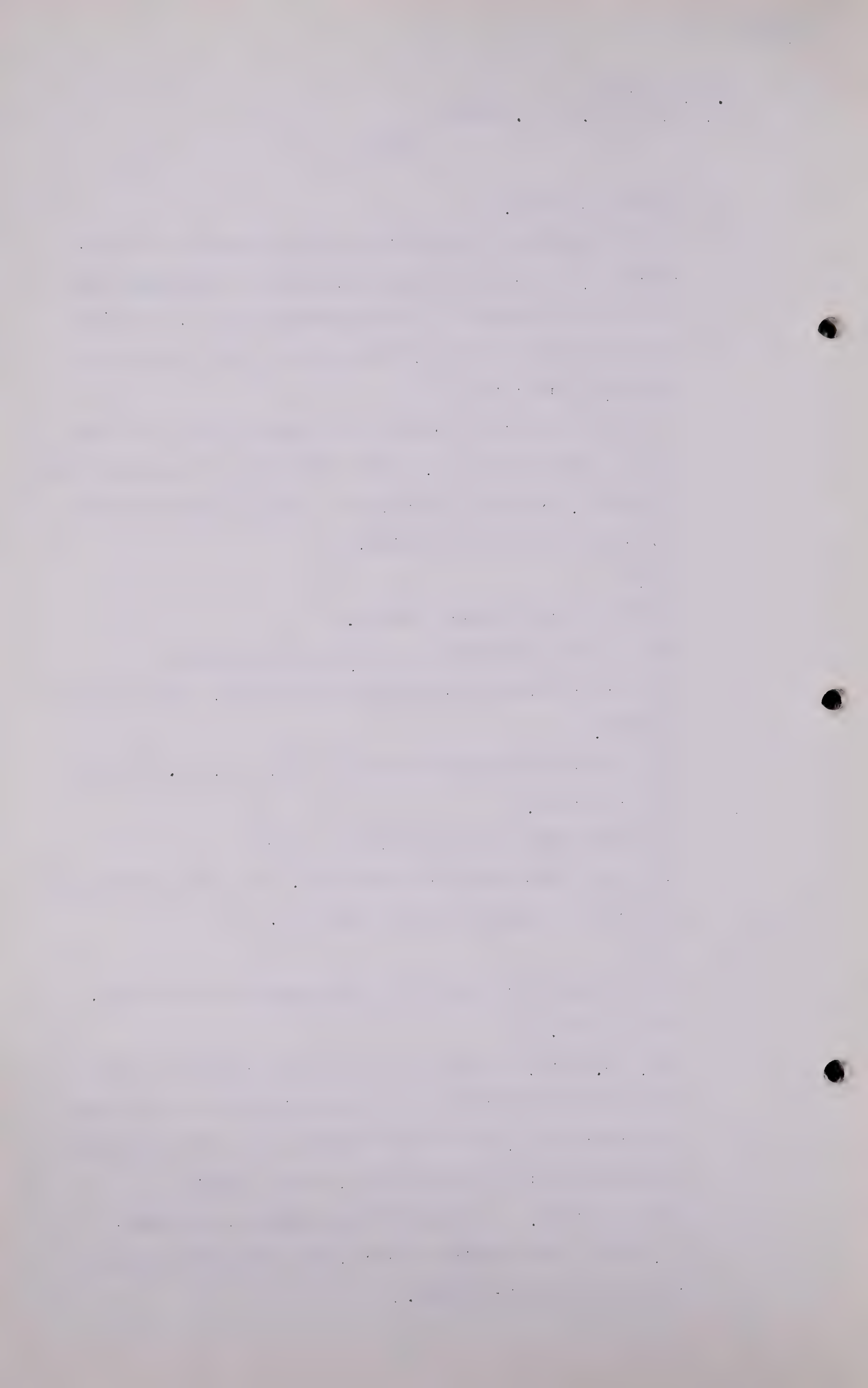
A It is the Board that has that duty, and I am only trying to help the companies that employ me.

Q Yes?

A To make the position of the gas companies here clear, that is all.

Q And, Mr. Davis, as long as oil and gas companies other than the two utilities go on exploring for oil and gas, and finding gas, the local utilities are saved the risk and the trouble of exploration, aren't they?

A That is right. Companies that operate, you know, Mr. Smith, on a limited return, have not much business in the speculative field.



R.E.Davis,
Cr.Ex. by Mr. S. B.Smith

- 1268 -

Q That may be?

A I thought you would like to know that.

Q Thanks for the information.

A You are welcome.

Q There is a lot about this I do not know, I will grant you, Mr. Davis, but I am trying to find out some things.

A All right.

Q Now, you, I think, have made it quite plain that your companies here have not under control or under contract sufficient reserves to ensure consumer protection for a reasonable period of years, if you assume that reasonable period as 30 years?

A That is true.

Q Do you agree with the recommendation or the suggestion of this Board at page 57 of their report which reads as follows:-

"The Board suggests that the Government should give consideration to the advisability of requiring utility systems to have sufficient reserves of gas held under their control or under contract to ensure consumer protection over a reasonable period of years."

Do you agree with that suggestion, or do you disagree with it?

A I do not disagree with that in principle. When it comes to the practical side of it . . .

Q It may not be so easy?

A It may not be so easy.

Q No?

A I would be in favour of letting things happen regardless

R.E.Davis,
Cr.Ex. by Mr. S. B.Smith

- 1269 -

of any Government insistence that it can be done.

Q In principle you say it makes good sense?

A In principle it makes good sense to do that thing.

Now, to be told by the Government that you were to do it, maybe you would have to spend money that would not be available.

Q And perhaps you are a sort of private enterpriser who likes to work things out with your long experience, and perhaps you think you can do that, and probably you can, without being told, is that it?

A Well, I do think that people can do it fairly well. But, on the other hand, we have all learned by now that we work under a great deal of Government supervision.

Q Yes?

A And regulation. The Federal Power Commission tells us in the States how to run our gas companies. We are all learning to get along with that.

Q Now, Mr. Davis, you were talking yesterday about trend, and I would like to discuss trend with you for a few minutes.

A Trend?

Q Trend. That is the word that you used yesterday.

A All right.

(Go to page 1270)

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1270 -

Q You talk about the trend in Texas?

A The trend in Texas?

Q Yes?

A I undoubtedly did. I do not recall the connection.

Q Well, perhaps I did not make it clear. You said at page 1172:

"In other words, gas has been found in more than
double the rate of its withdrawal."

I think you were there speaking of Texas. I think it is quite clear from your evidence?

A Whether I was speaking of Texas or the entire United States, it would apply to both.

Q You said that yesterday, and in Texas and in Louisiana. So that really 2 trillion feet of gas were being found in those areas for every 1 trillion feet of gas that were being consumed from year to year.

A That is it, sir.

Q Now, the finding in Leduc in 1947, I am sure you will concede, provided a great stimulus in the search for oil?

A Yes.

Q And most of Alberta's gas has been found in the search for and the finding of oil, hasn't it?

A Yes.

Q Would you discuss with me for a few minutes this trend so far as the discovery of gas is concerned in the Province of Alberta.

A I will try, sir.

Q Now, let us look at it, starting in 1947 when we got this great stimulus that we have referred to. I am going

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1271 -

to for this purpose, take the figures that the Board found last January as an assumption because the Board has made a finding and has prepared those figures, and perhaps you will assume with me those are the figures.

A They are figures I think we might as well work with.

Q That is what I am suggesting at the moment. Let us look at the trend in Alberta since 1947, and I am only going to a very limited number of fields. I have taken these dates from the reports of Mr. Dougherty and I have taken the figures from the Board's report. In 1947 apparently we had the discovery of Manyberries. I extracted those dates from their report and I suppose that the dates are correct.

A I am not doubting it. I do not just recall, I do not know.

Q Would you assume that Manyberries was discovered in 1947?

A I sure will.

Q And would you assume that the Board's finding was that there were 58 billion feet in Manyberries?

A I would.

Q And Smith Coulee in 1947, 15 billion feet, and Leduc in 1947, 610 billion, and that is your figure in this case. I am giving you your figure which you gave last year.

A All right.

Q 1948 we had Pincher Creek, and the Board's figures on Pincher Creek were 1.170 trillion, you will recall that?

A Yes.

Q And 1947 or 1949 we had Morinville over that period with 68 billion, according to the Board's finding last January.

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1272 -

In 1951 we had Medicine Hat, the addition to Medicine Hat, and measuring that addition by Mr. Slipper is 470 billion there, and Mr. Slipper was your former associate in connection with the Calgary and Edmonton Gas Companies.

A Is that in his favour or is that against him?

Q Well, I would not say it is very much against him. We will leave that to history.

A That is what I thought you were referring to.

Q Would you accept Mr. Slipper's 470 billion to Medicine Hat in 1950?

A Yes, I would.

Q Would you accept my adding up of those figures when I say it is 2.39 trillion?

MR. C.E. SMITH: Is it better than Mr. Steer's arithmetic?

MR. S.B. SMITH: Well, I would not want to guarantee it.

Q But according to my arithmetic, Mr. Davis, that is 2.39 trillion in four years.

A Okay.

Q We divide that by four years which is 590 billion in four years?

A Yes.

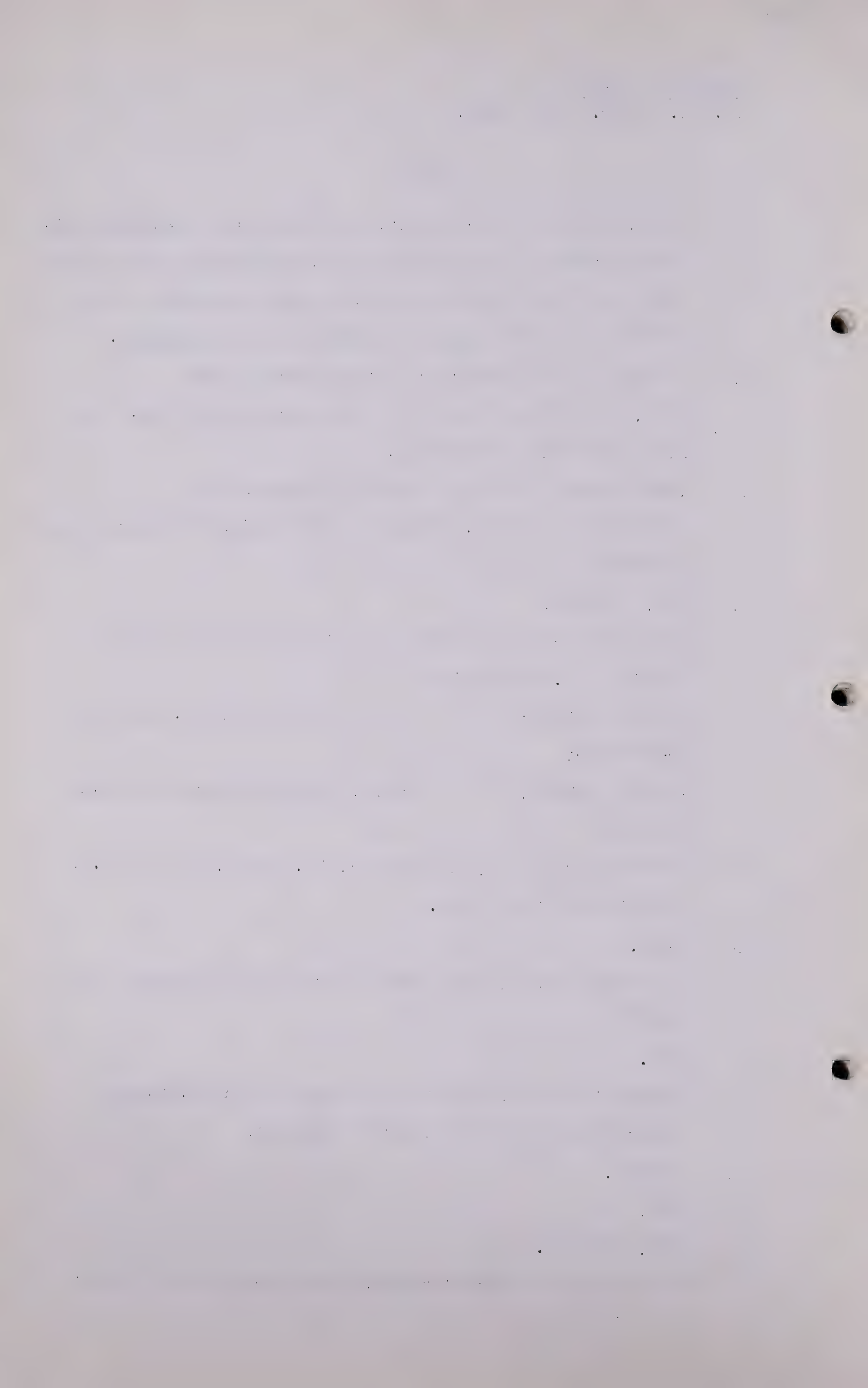
Q Alberta's consumption in four years would be, average consumption, would be about 50 billion?

A A year.

Q Yes?

A Yes, I guess.

Q So if we look there for trend over the past four years



Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1273 -

in those figures we have not been finding gas at 2 to 1, as in Texas and all over the United States, but we have been finding it about 12 to 1 on those figures?

A On those figures.

Q And that leaves out of account many other figures Mr. Dougherty has discussed and Dr. Nauss has discussed, many, many other fields, some large, some medium. It has left out all the others with the exception of those I have specifically mentioned.

A Left out a lot of fields I have never heard of until this week.

Q This week?

A Or last week, the week before.

Q Perhaps two or three weeks ago?

A Yes, that is right. We can leave them out now without making any difference in conclusions.

Q Perhaps that may be.

A You know.

Q Yes. Go ahead.

A From a standpoint of gas being available for home markets or for export, the gas has got to be present in sufficient volume, deliverable in a way that would make it a suitable source of gas. You gave me Mr. Slipper's figures on the extension of the Manyberries field. It is now about 470 billion feet, according to Mr. Slipper.

MR. STEER: The extension of the Medicine Hat. You said Manyberries.

THE WITNESS: Well, Medicine Hat. I believe the wells down in that area are small wells. I think

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1274 -

their average open flow is of the order of 2 million feet.

Q MR. S.B. SMITH: Well, you can go into it if you want to. This is not responsive to my question but you can go on.

A You were leading me into the idea I could possibly say the situation in Alberta is about five times about as good as it is in Texas.

Q Well, you want to discount Medicine Hat?

A I will point out I will discount everything you are talking about. Take it on your basis, it doesn't matter. After all, when you are talking about gas to go to a big market and the gas companies develop wells at the rate of average open flow of about 2 million feet, I suppose you might get a half a million feet out of those wells.

Q Well, Mr. Davis, how long was Mr. Slipper associated with the Gas Companies here?

A You don't need to worry about Mr. Slipper, he is a highly qualified man.

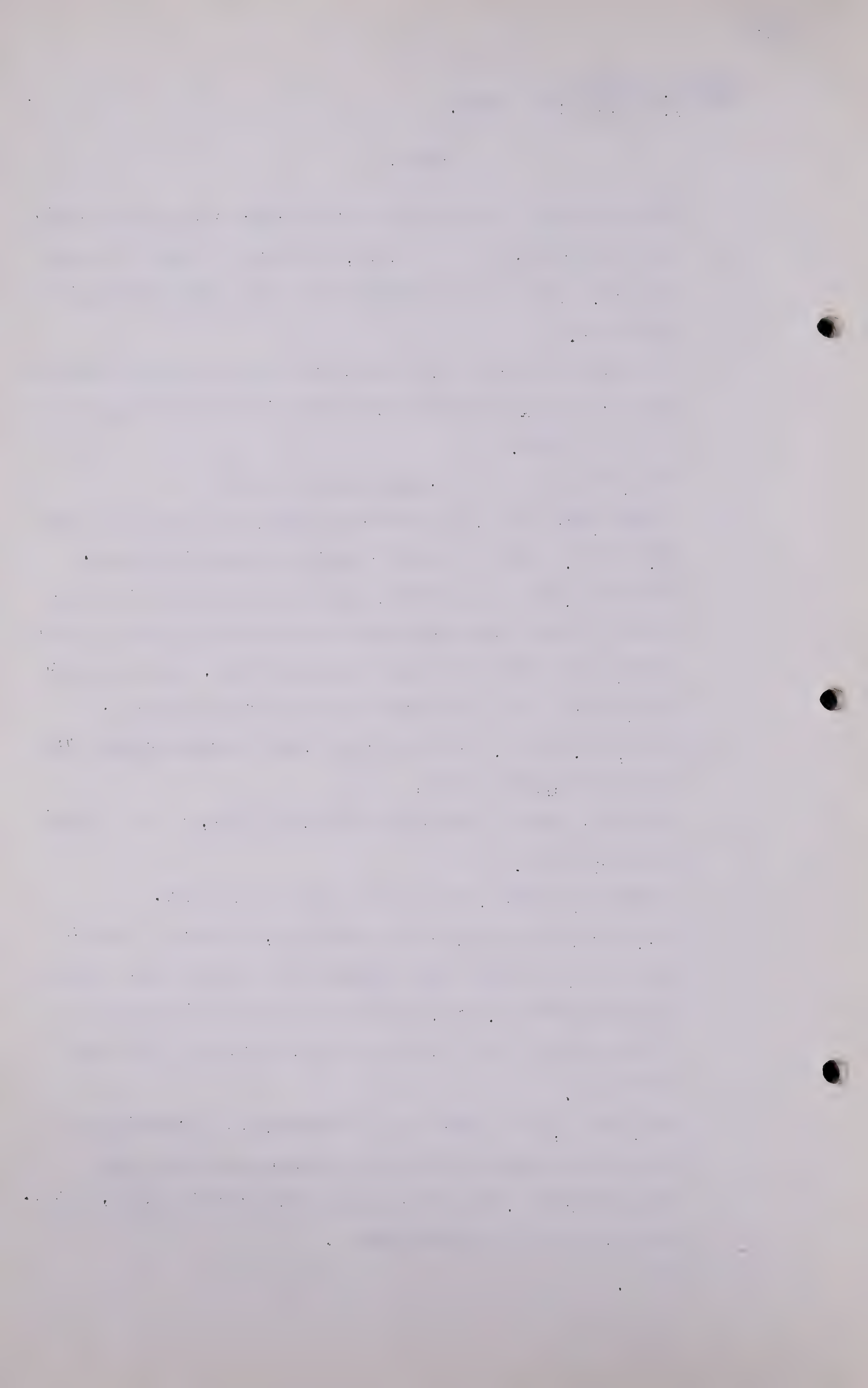
Q I grant you that. You may not agree with him.

A Mr. Slipper has never said anything, as far as I know, about how important a gas supply that might be for a big pipeline system. Mr. Slipper has stated his judgment on the reserves and I have no reason to argue with him about it.

Q Mr. Davis, you are the one yesterday who brought up the evidence of trend in Texas and Illinois and over the United States. You were the one who mentioned it, not I.

A Let us keep on the track then.

Q Yes.



Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.

- 1275 -

A Let us keep on the track.

Q And trend is an important thing to take into consideration in relation to the subject that we are discussing, isn't it?

A I think so, yes.

Q Yes. In fact, you said last year that you had always thought well of trends. I am using your own language at page 165 on October 31st, 1950, and that statement will still stand, I take it?

A Yes. And if it was not for the trend you are talking about there would not be any of us in the room right now.

Q It is probably because of the trend that we are here?

A That is the reason.

Q Yes. And my computation of about 12 to 1 is trend in Alberta, and that leaves out Cessford, what it might be worth, and it leaves out Princess-Patricia and Brooks and many others.

A You should not leave out Brooks, they have got a well down there, too.

Q Now, I also want to talk about 1944, Mr. Davis, and I do not want to take up much time in going over the years from 1944 but I added in 1944, Black Butte and Jumping Pound, taking in these cases all the Board's figures, and in 1946 Pendant d'Oreille, and my average, if my arithmetic is correct there, adding 32 billion for 1944 in Black Butte, 540 billion for Jumping Pound in 1944, nothing in 1945, and 213 billion for Pendant d'Oreille in 1946, adding those to the figures I previously gave you, produces a total of 3.286 trillion, and dividing that

Ralph E. Davis,
Cr. Ex. by Mr. S.B. Smith.
Cr. Ex. by Mr. Porter.

- 1276 -

by seven over the period of seven years, produces 469 billion for a year, which is about nine times the annual consumption in Alberta over the last seven years, isn't it, on the average?

A Yes, I think everything you are saying is essential, all right, assuming the basic figures to be sound, and assuming that the gas estimated is pipeline gas.

Q I will just leave it.

A A lot of this gas is not today pipeline gas.

Q Well, I am using the language of the Board about established reserves, general use, whatever that means.

A It doesn't make any difference what anybody says, gas is not pipeline gas unless it is worth picking up.

Q Well, that is common sense, isn't it?

A I would think so.

CROSS-EXAMINATION BY MR. PORTER:

Q Hello, Mr. Davis.

A Couldn't we have a recess?

Q Here I am back again. Mr. Davis, you have been coming here for a long time, 1924, 1925?

A That seems to be correct.

Q And you have had constant and varied intimate contact with the development of gas and oil and the consumer problems in this Province?

A Well, I am willing to say "yes" to that. I think I have.

Q You have come here on a great variety of problems year by year?

A That is right.

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1277 -

Q And so far as these two Gas Companies are concerned you have advised them on most of the problems that arose in their business outside of physical operations? You have advised them when they borrowed money, advised them when they needed gas, and you advised them on their reserve positions?

A Whether you call it advice or what you call it, I have served them in connection with studies of reserves and gas supply and what we think we are going to need, and when they wanted to finance I have been of some use to them in connection with that.

Q I am asking you these things because in some of the questions I propose to put to you I hope to find that you are ready to admit that you understand the rate base, that you know something about reservoirs, and that you have concerned yourself with the extension of supplies up here, and the geological and engineering levels. That is what I am asking you.

A I think that is all right.

Q Now, I am going back with you a piece over that and we will start back in Turner Valley. By the way, you were before the Public Utilities Board in Edmonton recently on a rate base hearing for Edmonton?

A Was that a rate base hearing?

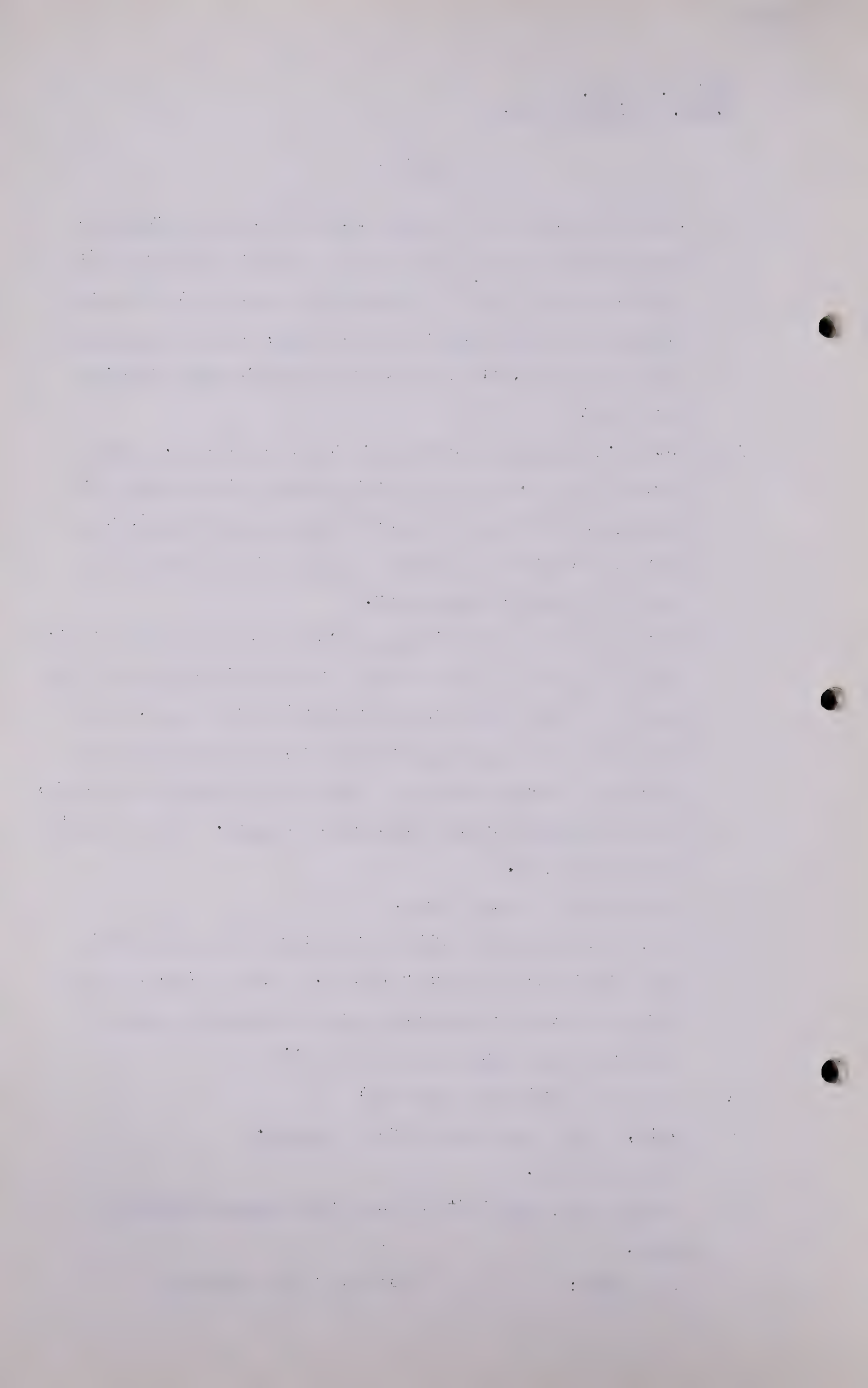
Q Well, it may have been a rate hearing.

A That is right.

Q I think they split it up into rate base and something else.

MR. STEER:

It was a rate hearing.



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1278 -

MR. PORTER: It had to do with money, eh?

MR. STEER: It had to do with the rate base too.

Q MR. PORTER: In that connection I understand Mr. Blackstock has written a judgment dealing with the rate base, and in that he said, I think, of you:

"Evidence on this point was given by Mr. Ralph E. Davis, an engineer of repute in his profession but also noted for conservatism in his estimates."

You are the same fellow?

A Well, I am the man he had in mind. His description might not have been exactly correct.

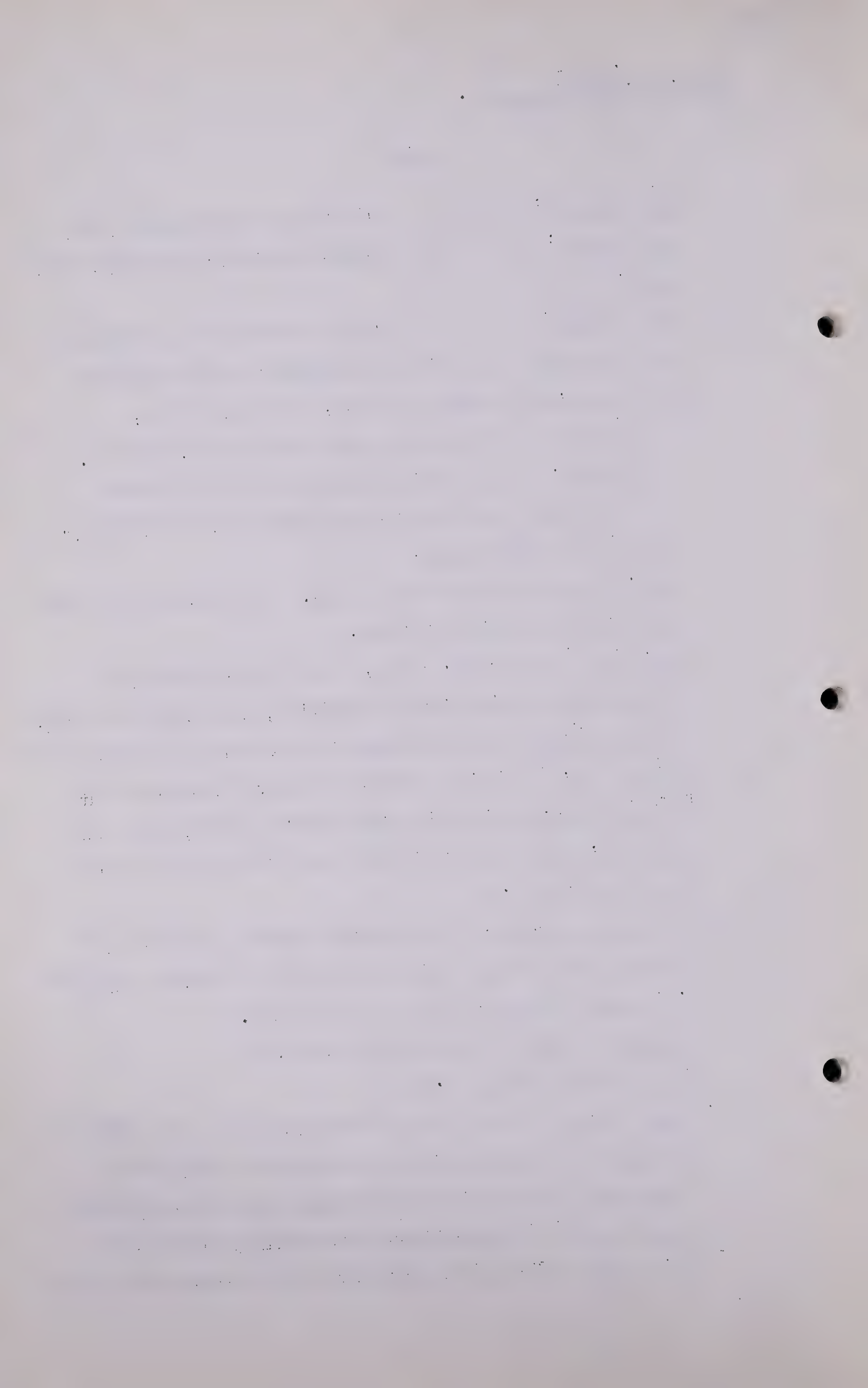
Q Now, back in 1931, Mr. Davis, this country began to develop these things called enquiries, and Judge Carpenter had a hearing as the Chairman of the Public Utilities Board in May 1931, in which I believe you gave evidence about Turner Valley, which you first began to study, as I remember it, in 1924 or 1925 because of the serious waste that was going on.

A I began to study it, not for that reason. 1924 or '25 Royalite No. 4 was the only well in the field. Royalite No. 4 was blowing a lot of gas in the air.

Q Perhaps I might be wrong about my date.

A No, I studied it in 1924.

Q What you say in this earlier testimony, I do not want to go into it, is that some new owners were thinking of acquiring or had acquired those gas companies and there were reports of great waste in Turner Valley and they consulted you because they were a little disturbed about



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1279 -

the extent of this waste and its possible damage to their companies. Now, that is the reason, as I understand it, but you studied them?

A In any case, what I told Judge Carpenter was what I thought at that time.

Q I appreciate that, and that is just exactly what I wanted to go over with you, and there is no reason why you should not change their minds. I am not trying to do anything.

A All geologists change their minds occasionally.

Q That is right. At that time you gave an estimate of what you thought about Turner Valley and I am reading from page 668 of the transcript from volume 5:

"Further, I stated it to be my judgment that the field would produce eventually a total of probably more than fifty million cubic feet per acre and gave as a total estimate of the future production, of the ultimate, that is the past and future production of the field, five hundred billion cubic feet."

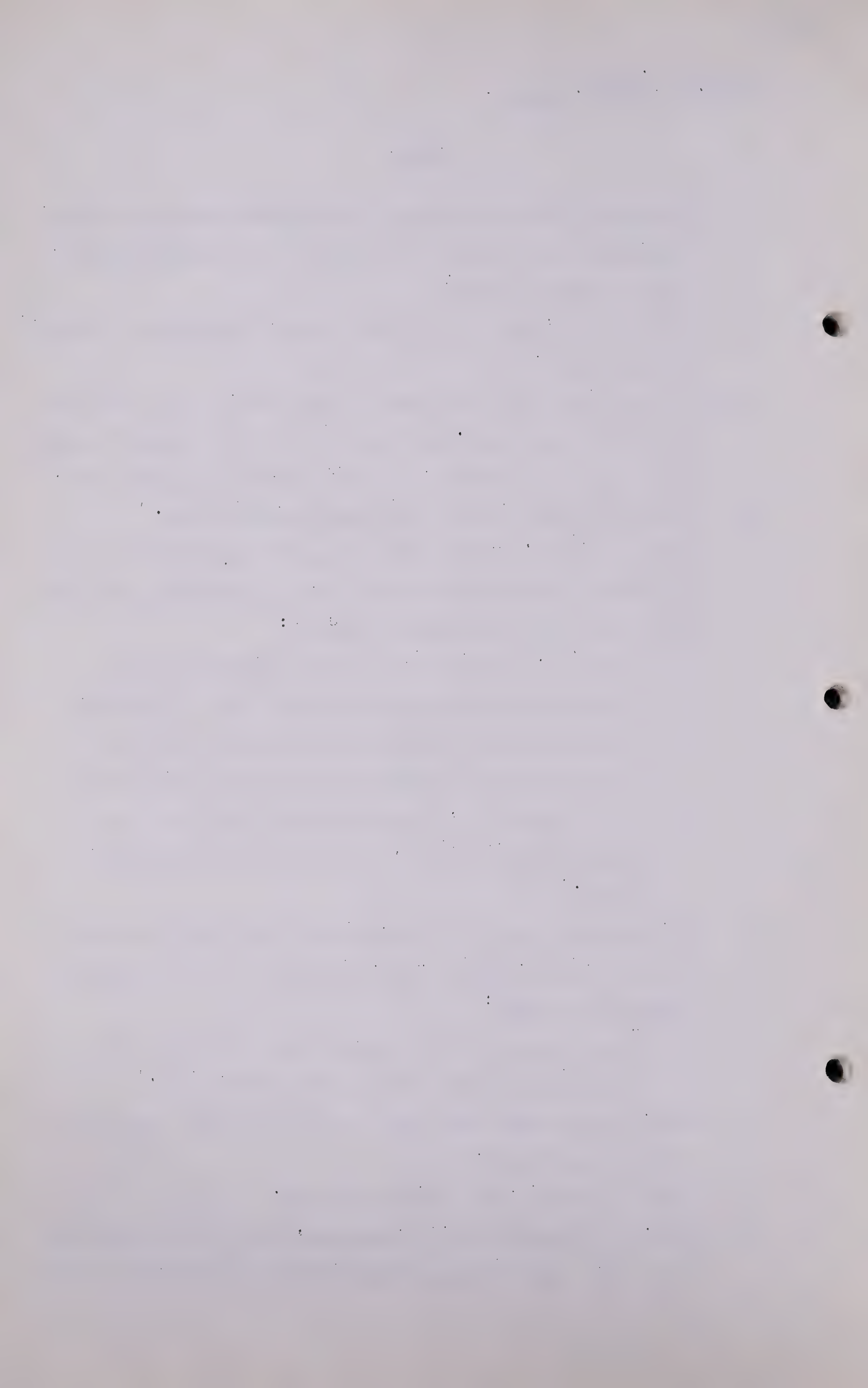
But you went on a little later when your good friend and my good friend, Sydney Wood, was pressing and you raised that and you said:

"I have never had the opinion that the field was good for more than 600 to 700 billion feet."

Now, do you recall that that was at that time about your idea of the Valley?

A That is correct, the record shows it.

Q Now, on the question -- I, perhaps, enjoy these questions more than some of the men here because I knew Sydney Wood



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1280 -

and I have seen the two of you in action.

MR. C.E. SMITH: You enjoy putting that evidence
in, too, don't you, Mr. Porter.

A Don't overlook the trend between my first answer of 500
and the later answer of 600 or 700.

Q MR. PORTER: It was the same day.

A I know, but a different hour.

Q Maybe your figures yesterday were given a little early.
Well, Mr. Wood is asking you about the area of Turner
Valley.

A About the what?

Q No, he is asking you about the reserves still:

"Q. Let me put it this way, Mr. Davis, to straighten
this out, having regard to the questions which
I have asked, and the answers which you have
given, will you agree with me to this extent,
that it is just as reasonable to suppose that
that Turner Valley gas field had an original
reserve of a thousand billion cubic feet as it
is to suppose that it had an original reserve
of seven hundred billion cubic feet?

A. Well, my answer is 'No'. "

"I see", says Mr. Wood , and you say, "With no qualifi-
cations."

"Q. Why?

A. Because, to my mind, such an estimate of the
gas reserves of a trillion cubic feet is un-
reasonable. It is unduly optimistic. It
would lead the people of Calgary to expect

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1281 -

" the field to last longer, in my judgment, than it would last. It would cause the Gas Company to place a confidence in the field that, in my judgment, is unjustifiable,"

so your opinion is firm that your ceiling is something under the trillion, 700 million?

A We were judging the field in the light of the evidence then available.

Q Exactly.

A It does not matter what that field has turned out to be, it is a question of what an honest, fair estimate should have been in 1931.

Q Calling it as you see it?

A As you see it on the basis of the evidence then.

Q Available?

A In front of you.

Q Now, when you call it as you see it, a good deal depends on where you are sitting, doesn't it, because you can only see surely from the point of view that is available to your seat?

A Well, it is a man's duty in this sort of work.

Q Sure.

A To kind of look around and get all four sides. He is not supposed to sit in one seat, look at one side, look at the high side always. He is not supposed to do that.

Q Or the low side either?

A Or the low side.

Q Now, at that time, too, I think you had a chance to look at the area of the Valley and you said on that that you

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1282 -

thought it was about 10,000 acres in the gas cap as it was then described?

A Yes.

Q And you said:

"When I say to you the field may be thirteen or fourteen thousand acres, I have already expressed the view that it is my judgment that 10,000 acres is a fair estimate of," --

and I was surprised to find this -

"-- the probable producing area."

I mean, the word "probable" after yesterday I was surprised to find it.

A Well, you should not be surprised.

MR. C.E. SMITH: That was 20 years ago.

MR. PORTER: Exactly.

A At that time the wells that had been drilled did not prove the extent of the gas to the end of the structure, that was apparent.

Q You say that as a matter of fact?

A That made an extension of that field probable. I would say that now.

Q You say that here. You said at that time it was going to extend north and south, if it is then demonstrated 8,000 acres, to what you thought would be a total of 10,000 acres.

A All right.

Q As you said.

A Okay.

Q But you also said something that interested me a good

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1283 -

deal in the light of subsequent events:

"It would be impractical to drill wells outside of a belt one mile in width on account of the steeply dipped limbs of the structure, that it seemed to me reasonable to believe that the producing area might be two miles in width; that it might be even wider than that; I might say that it was my thought then and it is my thought now, that most of the gas contained in the field will eventually be produced through wells drilled within the one mile belt. The gas from the lower portions of the structure and outside of that belt will largely flow in the wells already drilled, or which may yet be drilled within the proven area. At that time Turner Valley was producing, as I recall it, approximately one hundred million cubic feet of gas daily."

So that in addition to your 10,000 contemplated acres you had this flank drainage in your mind?

A No, I think the 10,000 acres included the --

Q Flank drainage?

A -- flank drainage area.

Q Now, the evidence is that the total productive area of Turner Valley oil and gas combined is about up to 24, 25 thousand acres, isn't it?

A Oil and gas together.

Q But your 10,000 acre gas cap is about on --

A Did you say "guess cap" or "gas cap"?

Q Well, I think they are synonymous but let's go.

A Okay. At that time, you know, we had no knowledge of

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1284 -

any oil.

Q Yes, we had 25 or 30 wells out there at that time.

A In 1931?

Q Producing naphtha.

A Petroleum oil, as a matter of fact.

Q But we had a reasonably good knowledge of geology in those days, didn't we? There was a lot of oil discovered up to then? There was a lot of oil discovered up to then.

Isn't Turner Valley just an orthodox block field with the water on the down-side and the gas cap on the top of it, just as orthodox as you would see in any text book?

A I think that is about right, very orthodox.

Q And yet nobody thought about including a little bit of that country as probable, just 10,000 arbitrary acres.

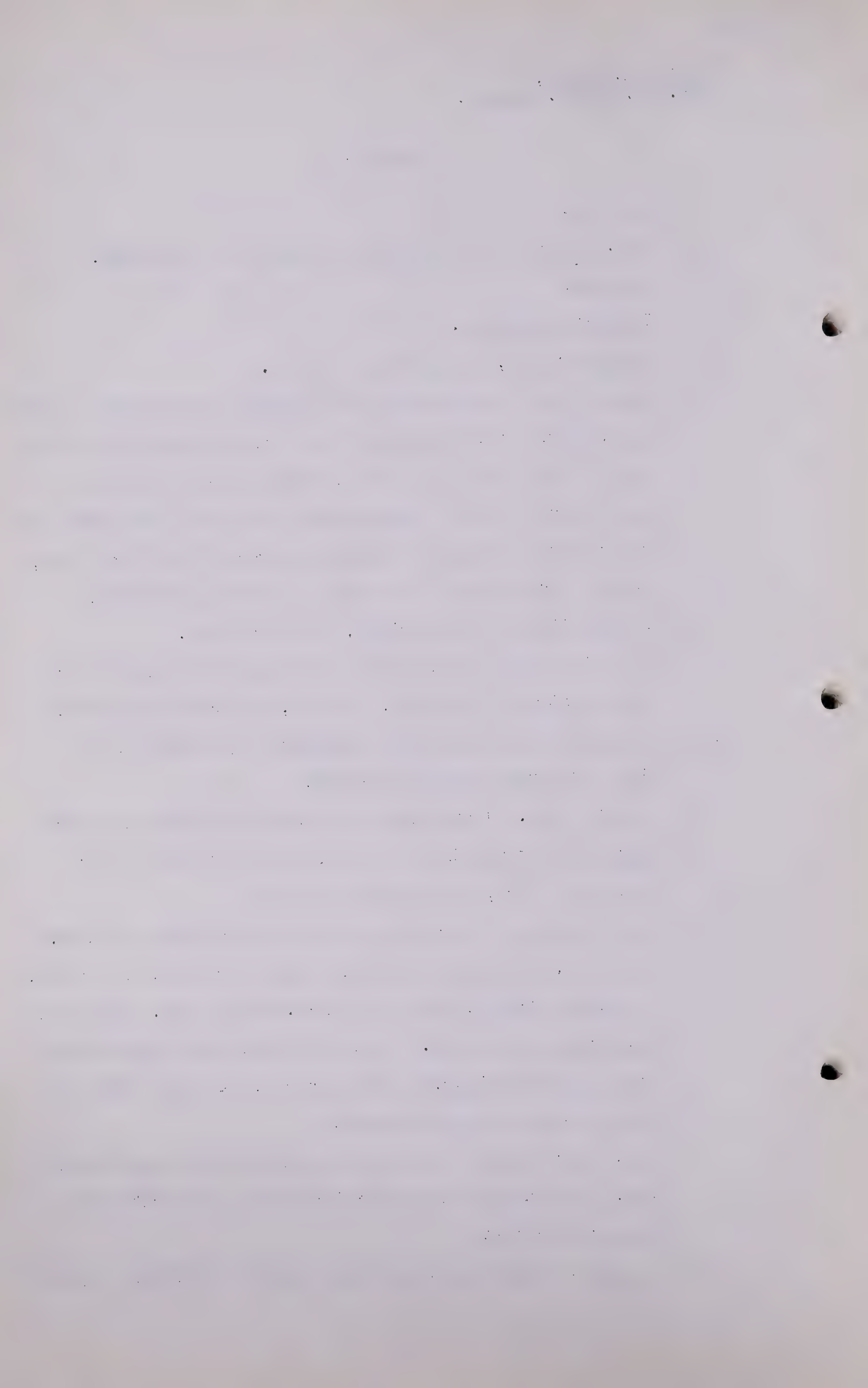
A How much should have been included as probable in the light of your present knowledge?

Q I don't know. I am simply suggesting to you that your approach at that time was very, very, I might use or misuse the word, conservative?

A Based upon the information we had at that time, it was, I believe, a proper estimate. The error made, my friend, my learned friend, was in the Mcf.'s per acre. We had no knowledge of porosity. We do not know today much about that except by figuring it backwards. At that time in 1931 we had to figure forward.

Q Well, there was a substantial development of gas cap in 1931, a known rate of production and a known rate of pressure decline?

A How did we know all about that pressure decline? Royalite



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1285 -

No. 1 had never been shut in.

Q No, but there had been a lot of them shut in. Royalite No. 4 was not the only one. There is a study in this record of a pressure drop.

A We had some record of the first readings of pressures, pressure decline graph plotting production against pressure. They had a pretty steep graph. In later years it flattened out but based upon pressure decline data the reserves in Turner Valley back in 1931 or prior to 1935 would have been indicated as something of the order of 600 or 700 billion feet.

Q Well, what I am endeavouring to urge on you is this, Mr. Davis, that we had considerably more knowledge of Turner Valley in 1931 than we have of a lot of these areas that we are dealing with, talking about, estimating today?

A That is sure.

Q And I am suggesting to you that perhaps it is wrong to be too pessimistic about that.

A I think it is wrong to be pessimistic about anything. I think you ought to look at it fairly, see what you see, reach a conclusion. You ought not to be too optimistic or too pessimistic.

Q Well, is it fair to say Turner Valley is an application of that theory to a set of facts?

A I think that is all right. I think the estimate, if I were doing it right now with the same set of facts, I believe I would arrive at a judgment figure about what I gave Sydney Wood.

Q In 1931?

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1286 -

A Yes, and then if it happened that drilling proved, or production proved that there was a much greater porosity in the field than I then knew about, of course subsequent history might have proved that there was not as much, that my 50 million feet per acre might have turned out to be a high figure instead of a low.

Q It was not your 50 million feet alone, it was the fact you took 10,000 acres which turned out to be a producing area of 25,000 acres.

A You are putting the oil field in.

Q Certainly I am, and when I get along here I will find you saying it is 200 to 300 billion coming up-structure.

A Yes.

Q In possible and in probable, that is what I am suggesting. Well, at any rate, Mr. Davis, you did a good job and persuaded the tribunal, because when they came to write the judgment they accepted your figures and it says here in the judgment, which I should perhaps identify, it is the judgment of the Board of Public Utility Commissioners of July 1931, the 20th of July, 1931, in the Canadian Western rate hearing, and it says:

"In his evidence, Mr. Ralph E. Davis, indicated a probable minimum remaining gas reserve in the field of 240 billion cubic feet. Mr. Stanley Davies made a more optimistic estimate, placing such reserve at 566 billion cubic feet."

And on the Turner Valley situation which was worrying you and worrying them at that time it says this:

"The loss of the Turner Valley gas supply would

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1287 -

"have a disastrous effect upon the Company's service. Unless the Company discovers further large reserves of gas, the sale of industrial and commercial gas would necessarily be eliminated and this would throw a heavy additional burden upon the domestic consumer. The resulting increased cost of domestic gas would also tend to reduce that consumption, with a still further adverse effect upon the price,"

(Go to page 1288)

R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1288 -

Q So you believed it and he believed it, and at that time, as the result of the evidence, that evidence, I think you will recall that as the result of your recommendation there was added to the cost of gas to consumers in Calgary the sum of \$100,000.00 a year to enable the company to look for some more gas and so that there is not any doubt, everybody honestly believed and acted on what was, in the circumstances, the best available judgment?

A I guess that is right. I believed it.

Q Yes. Now, we come along to Turner Valley later on . . .

MR. C. E. SMITH: Could we come along to an adjournment, without interrupting my friend?

MR. PORTER: Oh, yes, we can.

A I do not like the trend anyway.

THE CHAIRMAN: We will adjourn for a few minutes.

(Hearing resumed after short adjournment.)

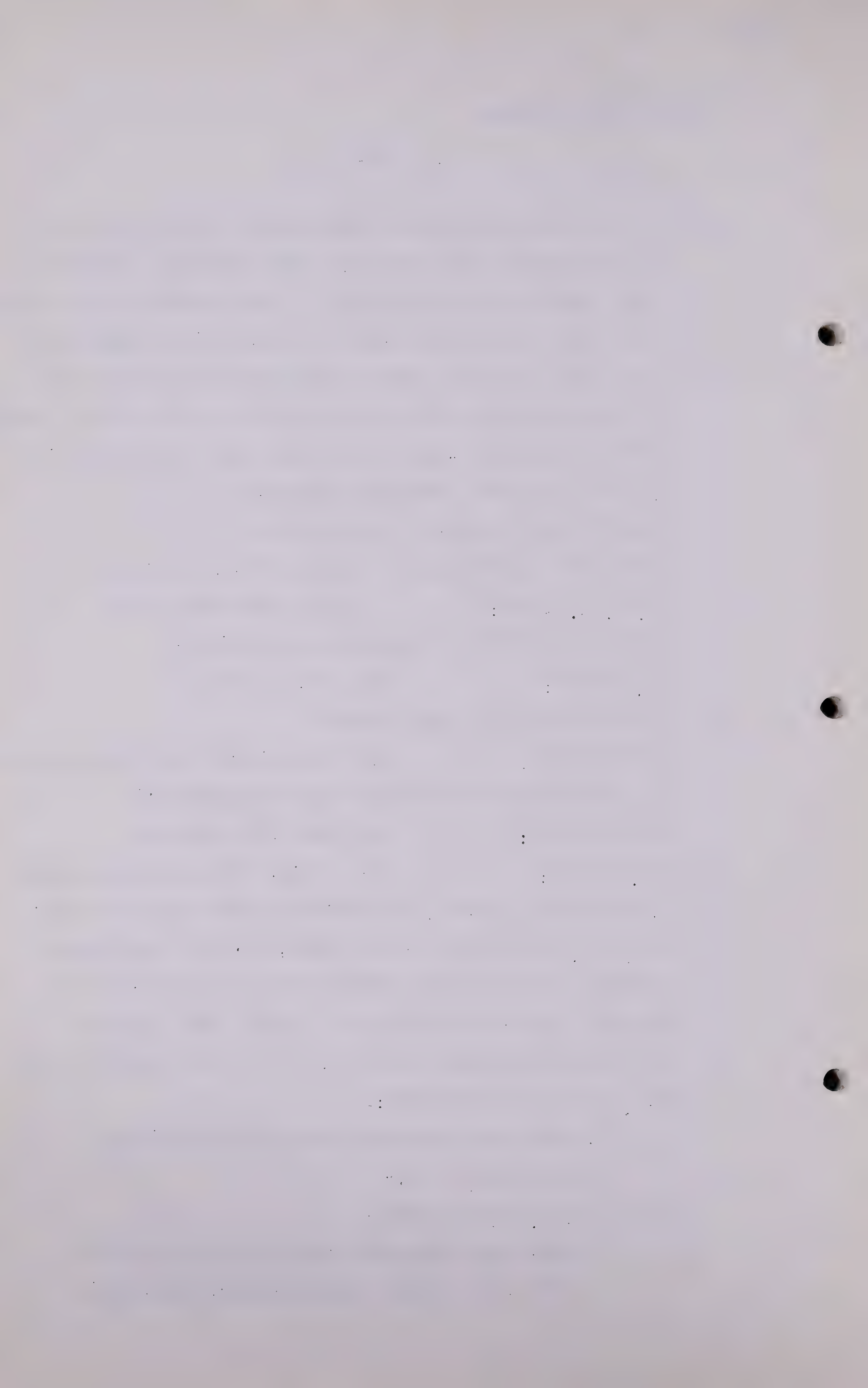
THE CHAIRMAN: All right, Mr. Porter.

Q MR. PORTER: Mr. Davis, during the adjournment I checked the record, and I might as well put it in now, that is, in reference to the \$100,000.00 of a geological allowance with regard to Turner Valley in 1931, and in the 1945 hearing, in Volume 12, at page 943, you said what you have already told me, but I think I should put it in, and it is as follows:-

"I think that resulted in the rate hearing that the company . . ."

I am sorry, I misread that.

"I think that resulted in the rate hearing held in 1931, and I think that the company was given



R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1289 -

"approval of an expenditure of \$100,000.00
a year in the search for gas, and the reason that
plea was made - I made the plea myself - that the
company should be permitted to spend money to find
gas, and for the reason that its principal supply,
Turner Valley, was being blown through the air, at
the rate of 4 or 5 million feet a day . . . "

I think that is wrong. I think it should have been 4 or 5
hundred million - -

A It should be 4 or 5 hundred million, yes.

Q "and we had better get busy and find some more gas."

A Yes.

Q And pursuant to that policy I find that you testified in
this inquiry in February - no, it is not - in an inquiry
in February, 1946, before this Board, in Volume 68, page
5492 . . .

THE CHAIRMAN: That would be before the Natural
Gas Utilities Board, Mr. Porter.

MR. PORTER: Yes, I am confused.

Q Now, you said this, Mr. Davis, in answer to this question:
"Now, as I understand it during that period from
1925 down to the present, the Gas Company has not
spent any large amount in ensuring its own gas supply."
Mr. Chambers was examining you, and he was appearing for
the Royalite Company.

"What would you say as to that?

A. Well, the Gas Company for many years has maintained
a Geological Department. A Department charged with the
duty of making studies and surveys of what might be

R.E. Davis,
Cr. Ex. by Mr. Porter.

- 1290 -

"considered prospective gas land and there was some exploration work carried on, field surveys and exploratory drilling. I think that the Gas Company may have spent in that time period that you have named, maybe a million dollars. I do not know."

So that as a result of your views about Turner Valley you did accelerate the geological work and your drilling for oil, as a result of an honest opinion of the imminence of exhaustion?

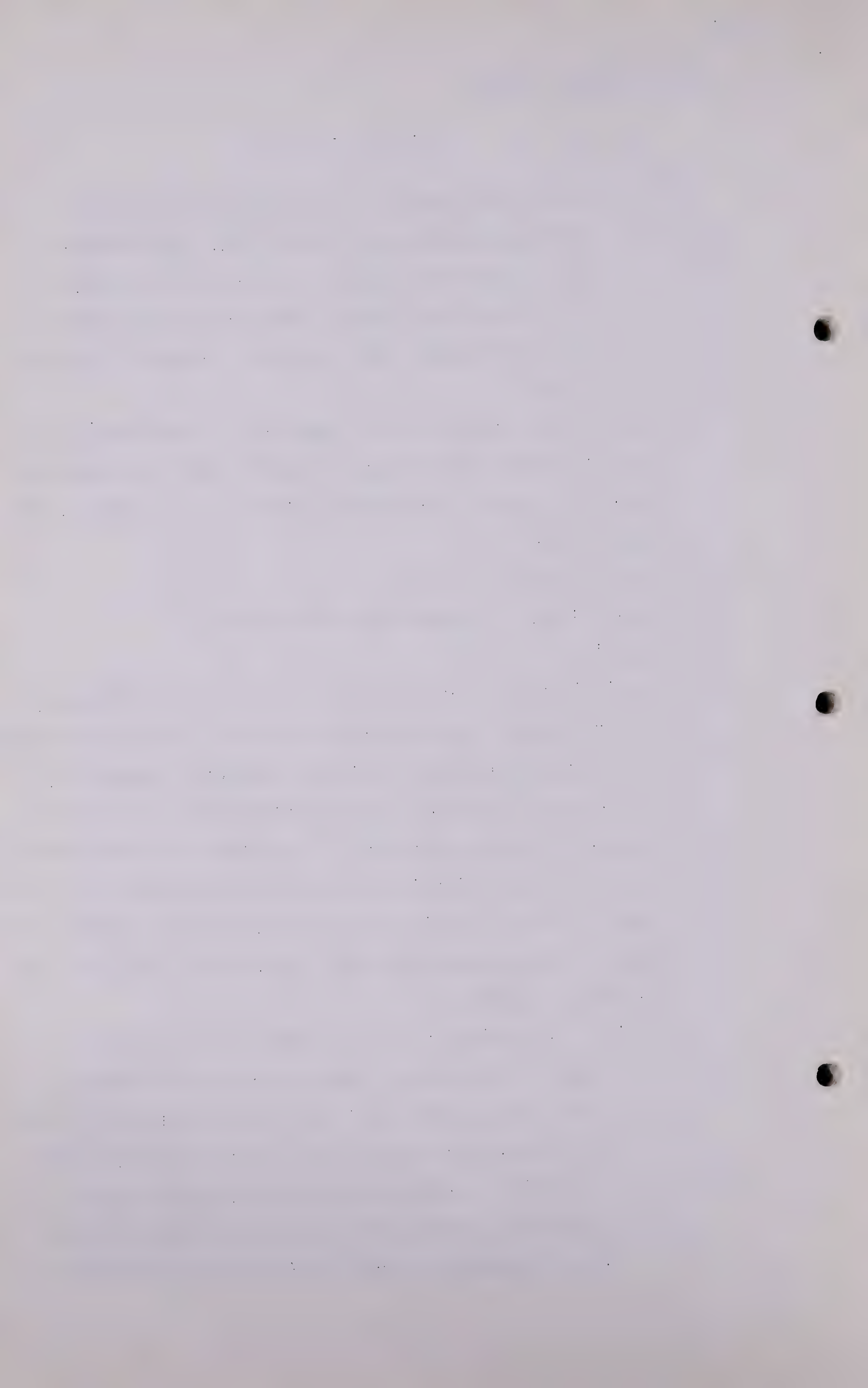
A And the drilling of oil?

Q Yes? I may be before the wrong Board.

A All right.

Q Now in 1945 there was another occasion for examining the Turner Valley situation, and it took the form of an inquiry before the Natural Gas Utilities Board with respect to, I think, some contemplated conservation measures in Turner Valley, looking to gathering, processing and transmission, and at that investigation you testified and gave your then view of Turner Valley's reserves in Volume 11, at page 799. You were being examined by Mr. Steer, and I fancy you were reading a statement.

" As of June 30, 1944, there were about 95 wells in the gas cap capable of producing natural gas. Total production from the gas cap is estimated at about 1,100 billion cubic feet to June 30, 1944. The initial rock pressure of the field was never gauged but is believed to have been approximately 2,050 pounds per square inch (top hole pressure)."



R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1291 -

And then you gave an estimate of the amount then recoverable, at, I think, as of the 1st of January, '45, at page 806 of the same volume you said,

" After giving due consideration to the various factors which have an effect on the quantity of gas available from the gas cap it is my conclusion that future production after January 1, 1945 will not be less than 300 billion cubic feet of wet gas."

And at page 795 you deal with acreage, and you said on acreage:-

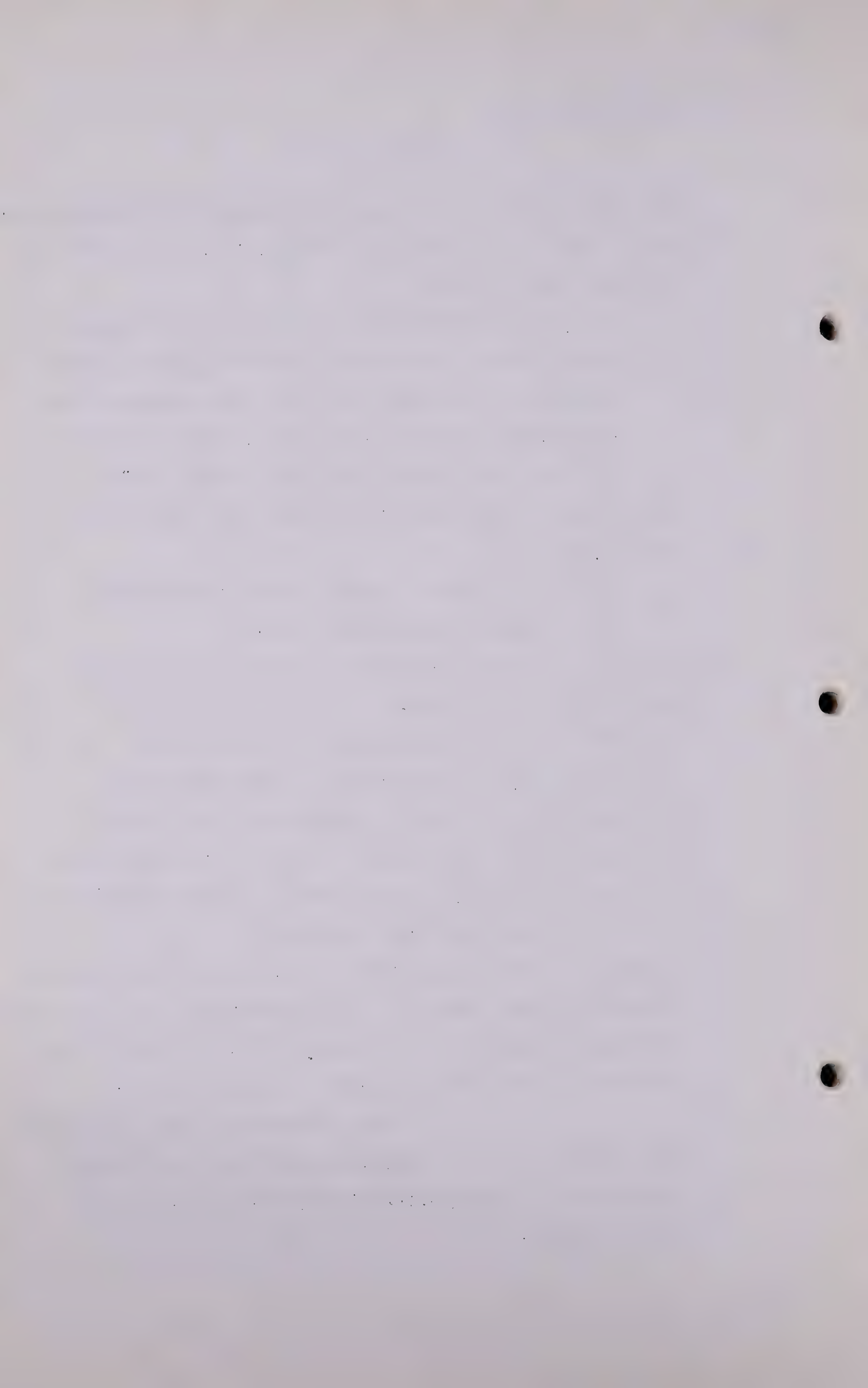
The proven area of the gas cap is considered by me to embrace some 10,000 acres."

Precisely the same figure that you insisted on setting up with Mr. Wood in 1931.

"The South oil field has an area, proven for commercial oil production, of some 8,000 acres which may be somewhat increased by future development. The North oil field has a presently proven area of some 4,200 acres which is almost certain to be increased by future drilling."

So that the total area of the field, the gas cap remaining constant in your estimate, with an addition of an area which you have disregarded in the form of oil, there was 12,000 acres up to that time, according to those figures.

Now, you come along to 1950 before this Board, in October 1950, and in Volume 1, and again you are being examined-in-chief by Mr. Steer, you gave this estimate:



R.E. Davis,
Cr. Ex. by Mr. Porter.

- 1292 -

"After giving due consideration to the above factors which have an effect on the quantity of gas available from the gas cap, it is concluded that future production therefrom, after January 1, 1950, will be of the order of 350 billion cubic feet of wet gas. This estimate assumes production to an average bottom hole pressure of 200 p.s.i.g. The increase in this estimate over the estimate of 'over 300 billion cubic feet' made by me as of January 1, 1947 . . . "

and I haven't got that. You said 300 billion in January 1950, January, 1947, I am sorry.

A I said over 300.

Q Yes, over 300 billion.

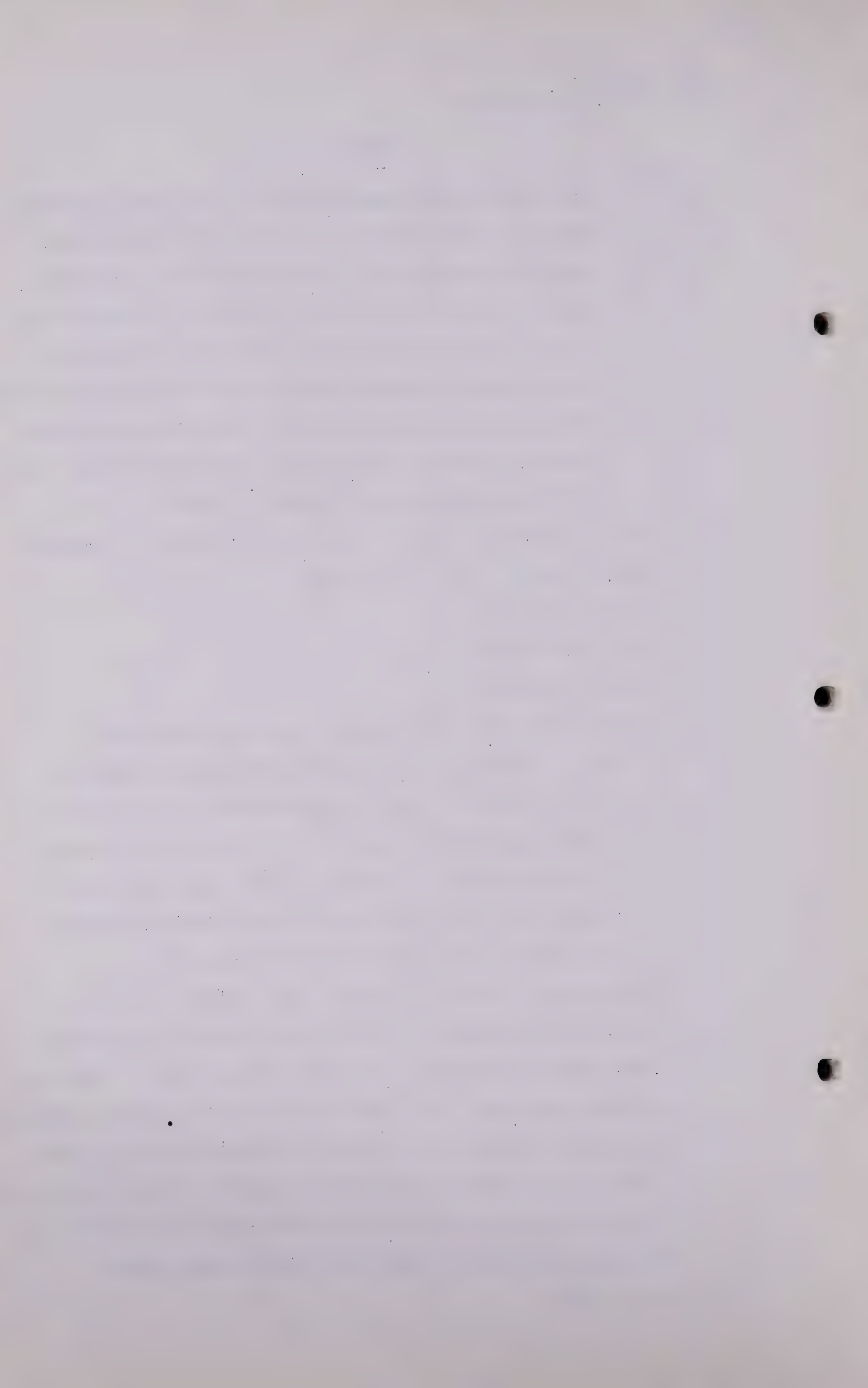
A Maybe I meant 400.

Q But this is 1947, and the one I read you was 1945.

". . . results I believe from addition to reserves as a result of upward migration from the oil zone. This migration of gas from the oil zone to the gas cap is expected to continue for a long time, and is likely to make necessary further upward revisions of reserve estimates in future years."

That is up to 1950. I believe that you say that the recoverable reserves of natural gas for the field as of 1950, are estimated at 477 billion cubic feet. This is wet gas, sour gas, not available to market in the condition in which it exists at the time of production, but of the total of 477 billion cubic feet estimated, it is considered that 350 billion cubic feet will be recovered from the gas cap and 127 billion cubic feet from the oil field.

A Oil fields.



R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1293 -

Q Oil fields. And I think, although I have not the reference to it, that of that 127 billion you said about 63 billion would be all that could be considered as marketable gas because the others would be either not connected or lost in production?

A The removal of sulphur, liquid, etc.

Q Yes. Now, as I observe, you say that there may be further upward revisions depending on the migratory behaviour of this gas from the oil zone.

A Yes, sir.

Q Now, the Conservation Board publishes a statistical record, and I have here now, entitled "Alberta Oil and Gas Industry, 1950", containing on page 21 a chart and this chart deals with the Summary of Gas Production and Disposition from Turner Valley from 1922 to 1950, and in Column 3, under the Total . . .

A Pardon?

Q If I could come over there and we could both look at this thing, we might save some difficulty.

A Yes.

MR. C. E. SMITH: I have a copy of that.

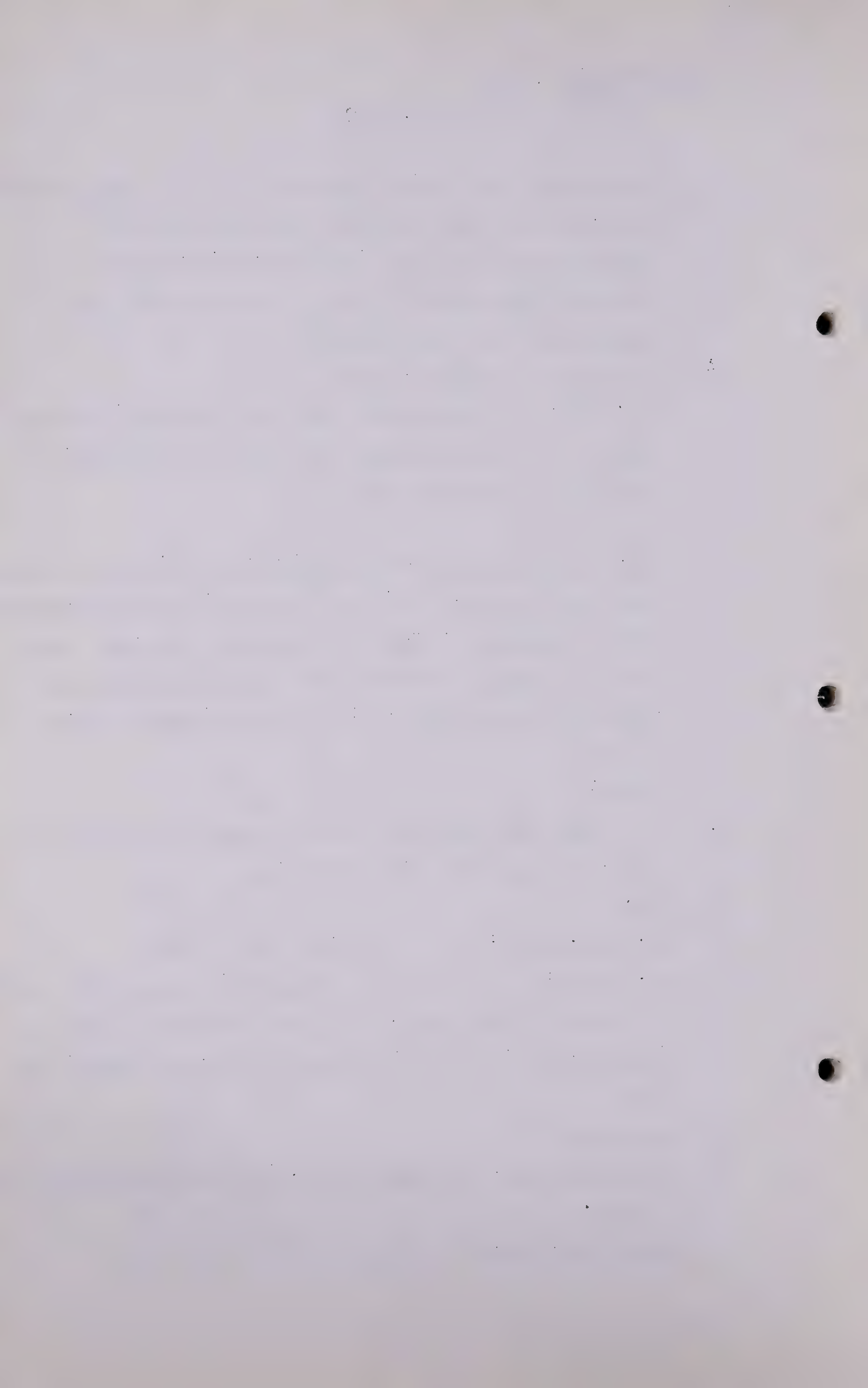
MR. PORTER: Oh. I might give that to Mr. Davis.

Q It is page 21, Mr. Davis, the column under the heading "Totals", the fourth column from the left-hand side of the page.

A Yes, sir.

Q The total there, you will observe, is 1 trillion 552 billion in 1950.

A I see that, yes.



R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1294 -

Q Now, to that we add your estimate of 350 billion which I just read you, as of the 1st of January, 1950, remaining to be recovered, and 127 billion from the oil migration, gas migrating from the oil and, as I see it, we have a total of just over 2 trillion? The 350 and the 127 added to a trillion and a half.

A Can you add that?

Q Pretty close to it.

A All right.

Q Now, I have gone over these things, Mr. Davis, with you because I think the Board should have some measure of the unsoundness of what Mr. Blackstock calls "conservatism".

A You are telling me?

Q I was going to ask you this, and I am going to ask you this now, in view of the evidence you gave yesterday, in which you found on any suggestion of including probable reserves, and you transferred possible reserves into the outside world, if not into the impossible, and I was just going to ask you in the light of these figures on Turner Valley, and the physical characteristics of this country, whether that is just quite sound?

A Have you asked the question? Is that the question?

Q Now, surely you are not suffering from low permeability this morning?

A No, but the hydrostatic head is getting low. In the first place, I know that you do not mean seriously that I had transferred the so-called possible to the impossible.

Q Well, I did not just ...

A You were willing for the Board to think that is what I said,



R.E. Davis,
Cr. Ex. by Mr. Porter.

- 1295 -

that they should believe you instead of believing me.

Q I did not say you said that.

A You know I did not say that.

Q No, I know.

A I know there is possible gas and possible oil in the sediments wherever the drill has not drilled and found it to be lacking. I know it is possible. But I tried to make it clear yesterday and I thought that estimates of possible, with reference to the two figures, were ridiculous, and I tried to make it clear that is what I meant. I do not mean to say that there is not a great amount of possible oil and gas in Alberta not yet known. I do not know the man who can make an estimate that has any great meaning on which you could borrow a lot of money, reducing to an arithmetical figure oil and gas reserves called possible.

Q Mr. Davis . . .

A Well, that will clear that thing now.

Q Just a minute. I am not entirely clear, because what has been included as possible is, I think, something different from this oil and gas all over Alberta. Don't you agree that the inclusion of possible is an area about which nothing is known? It is more than that, isn't it, and that there is some basis for saying that that is likely to be gas-bearing territory, something of a better basis than an area about which you know nothing?

A Well, if I had my choice to spend my money exploring for gas in this Province of Alberta, and had to take the area classed as possible around the Viking-Kinsella field, or an equal area, chosen at random, blindfolded, I believe I

R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1296 -

I would take the latter.

Q Well, of course . . .

A In other words it is nothing but wildcat stuff, with no evidence whatever.

Q We have had a good deal of talk about Viking-Kinsella?

A Yes, sir.

Q Will you say the same things about the possible areas included in all the other fields?

A Well, I have not looked at the possible areas.

Q In the others?

A In many of the others. No, I do not think I could say that in many of the others.

Q Well, now . . .

A I think there are areas that are classed as possible in the others that have a better chance than the stuff around Turner Valley or Viking-Kinsella.

Q Now, the Turner Valley figures which I have given you indicate that, in fact, the conservative view simply sold the Valley short to the tune of 25% of the producible gas, and I am suggesting to you that, whatever the S.E.C. may do, it is a reasonable and, indeed, a proper thing to include probable areas in an estimate?

A And include them in gas that is available for export?

Q I say in an estimate.

A Well, let us get what you mean, an estimate of what? Gas available?

Q Gas available.

A For export, or for home consumption.

Q Over a period of years?

R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1297 -

A I happen to disagree with you, my friend.

Q You do not agree with me?

A I would not give it any consideration whatever.

Q That is the basis on which you selected your 245,000 acres in Kinsella, that it is commercial?

A That is right.

Q You can drill down there and it will produce from there?

A I think it will, but I found some of it that does not.

Q But you eliminate anything outside of the 245,000 acres?

A Admitting that anything might be possible.

Q Oh?

A Possible. We are talking about reserves available.

Q Well, now.

A For export. Available for export.

Q Oh, yes, but I am talking about reserves that will move laterally due to a pressure sink?

A In the first place, you have got to have the reserves; and in the second place, you have got to have some sort of channel; in the third place, the pressure differential; and in the fourth, permeability. You have got to have all four things that you do not know about.

Q Your proven area in Kinsella then is confined to the four, to the area in which you know all those four things, is it, the 245,000 acres on which you can drill a well that will pay out?

A That I believe will.

Q That you will believe will?

A In 95 out of 100 wells drilled in there it was my belief when I drew the line that we would get the gas and I called

R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1298 -

it proven. It was also my belief outside of that line the chances were about of the same order that 9 out of 10 wells would be non-commercial wells and not worthy my laying a line to.

Q Non-commercial in what sense?

A Well, we go back to the elements.

Q You mean they would not pay out?

A That is right.

Q So then your 245,000 acres includes not only what is underneath them but you think will migrate in laterally?

A I think that the inward migration will be of some, rather minor consequence, but it will not be from areas a distance of 10 or 15 miles, it will be from much shorter distances that we are talking about, if we are talking gas, and if we are talking about a geological gas formation, I think gas will move 15 miles, but not enough gas to suit your purposes.

Q That depends, of course, and the migration will be determined by the rate of depletion, will it not?

A That will be a minor factor. They might reduce this Kinsella field to the place where to make it practical to keep on taking gas, to operate it, where you are only getting enough gas to pay expenses, and you cannot get any more unless you throw in more compressors, when that time comes, if it comes, and there be a suitable supply of high pressure gas such as the gas cap at Leduc, of a similar nature that may be found in the Valley, not in the Valley, I mean in the Province, within reasonable distances, then I understand that the operation of the Kinsella field will



R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1299 -

be abandoned as a source of pipe line gas.

Q By the way, that is exactly what happened - I am glad that you raised that - that is exactly what happened in those charts you showed us yesterday to submit the proposition that you could not get over, I mean to support the proposition that you could not get over 60 to 65 or 70% of the contents of some of those fields of the Gulf Coast, wasn't it?

A The chart showed that I could not get on the average more than about 85.

Q Yes, and wasn't that exactly what happened, that those fields were drilled up for low price markets, 3 and 4 cent markets?

A The price of gas in the Gulf Coast in those years was very low, 3 and 4 cents. You may recall I showed on the chart 12 fields, two in Michigan, two in California, one in Wyoming and in West Virginia and New York. It was not all 3 cent gas. And in the second place . . .

Q The reason I suggest . . .

A I would like to finish that statement.

Q Yes, go ahead.

A . . . in the fields, in the Gulf Coast, the abandonment of the field did not occur until the quantity of gas taken annually was extremely small as compared to past production.

Q That was through the available wells?

A Yes. They were not in that territory interested in drilling another 57 wells.

Q No?

A In a depleted gas field.

R.E. Davis,
Cr. Ex. by Mr. Porter.

- 1300 -

Q Because, as you suggest might happen in Viking-Kinsella, there was other gas available?

A Certainly.

Q So that the limiting factor was the position, the economic position of the gas which could be found cheaper?

A Yes, and that might be true, you know.

Q I know, but I gathered yesterday that it was an engineering statement that you were making, and it occurred to me that there might be economic reasons for the inability to get out the 15% of the gas, and that is why I raise it with you today, Mr. Davis. Well, now . . .

A If it were not economical - let us clear that point.

Q Yes?

A We could surely in most cases take more than 85% of the gas until stopped taking it.

Q When it is not profitable to take it?

A When it is not profitable to take it.

Q Mr. Davis, when you first came up here to advise the Northwest Company, and I am not sure that that was its name in those days, their source of supply was the Viking field?

A Yes.

Q The old Viking field?

A That is right.

Q Now, it was the discovery of the Viking field that led to the construction of the system?

A That is right.

Q And that field began to exhaust faster than had been first recognized and the problem of supply became quite a concern to the company?



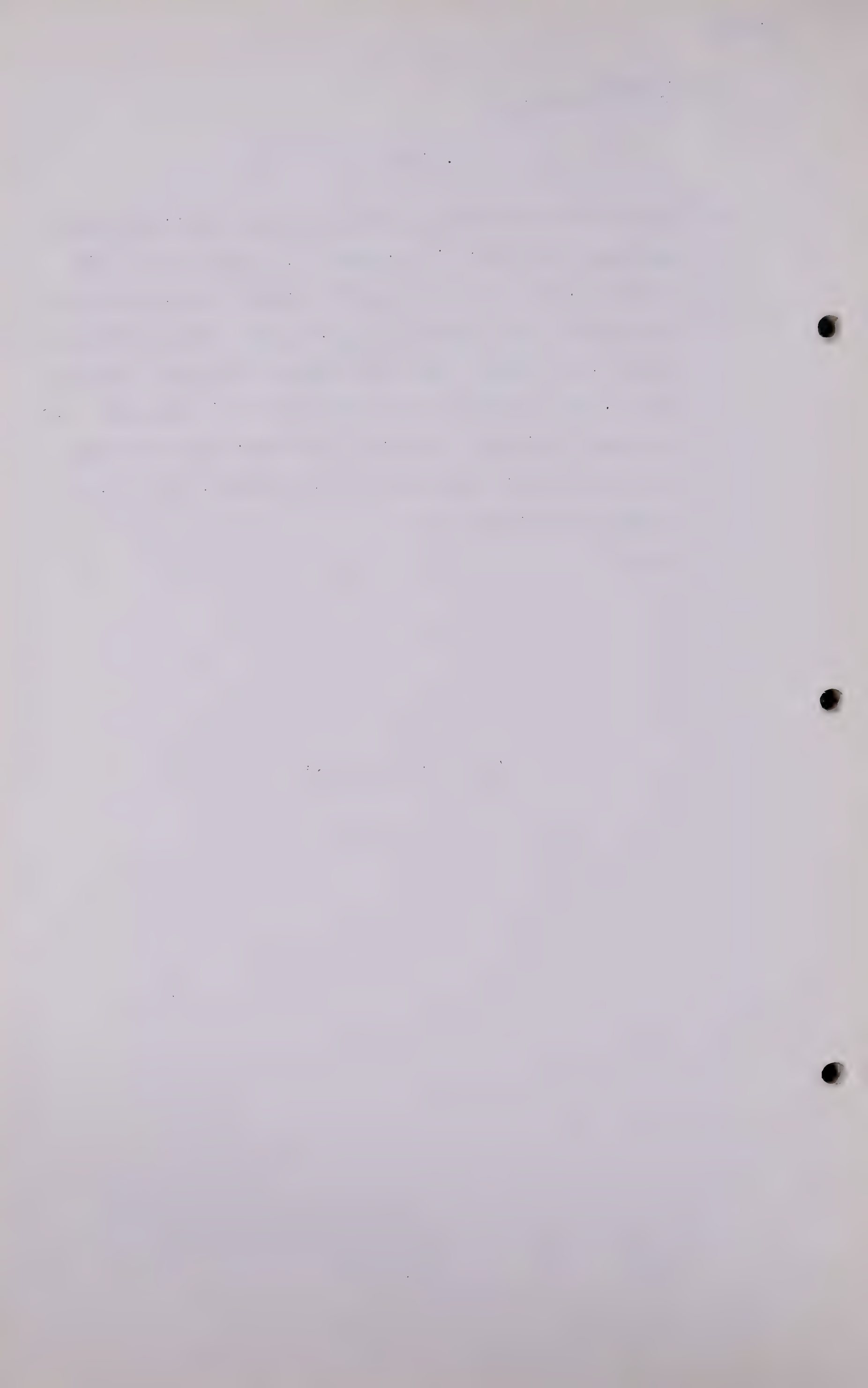
R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1301 -

A The field continued to produce gas and the production of gas per pound drop in pressure, it seemed to be quite constant, very substantially a straight line, and after did become very slightly concave upward between 1923 and 1940, very slight, there was nothing wrong with the gas field, but it happened that the markets in Edmonton were growing, additional gas had to be taken over and above what those particular wells would produce, that is, as compared to the past.

Q Yes.

(Go to page 1302.)



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1302 -

A But they were looking forward. We had many discussions up here. Mr. Milner at that time was anxious to have a suitable supply.

Q I think you are going back too far. He was a member of my unit at that time.

A How far back are we going?

Q Well, I am just going back to the Viking days before the Kinsella was developed. I think Mr. Yorath is the man you are talking about.

A No, the Viking thing did not come into play until about 1940 or '41.

MR. STEER: Kinsella.

A I mean the Kinsella. And we had many discussions about what to do about it all, ending in the decision to take leasehold rights on a very substantial area to the east.

Q MR. PORTER: Now, just a moment. My memory may be bad but it seems to me it was away before 1940, indeed, in the early '30's that a fellow by the name of McDonald went out there east of the Viking field and Kinsella and drilled a good gas well.

A I think that is true. I don't know the fellow's name.

Q A fellow from Duluth?

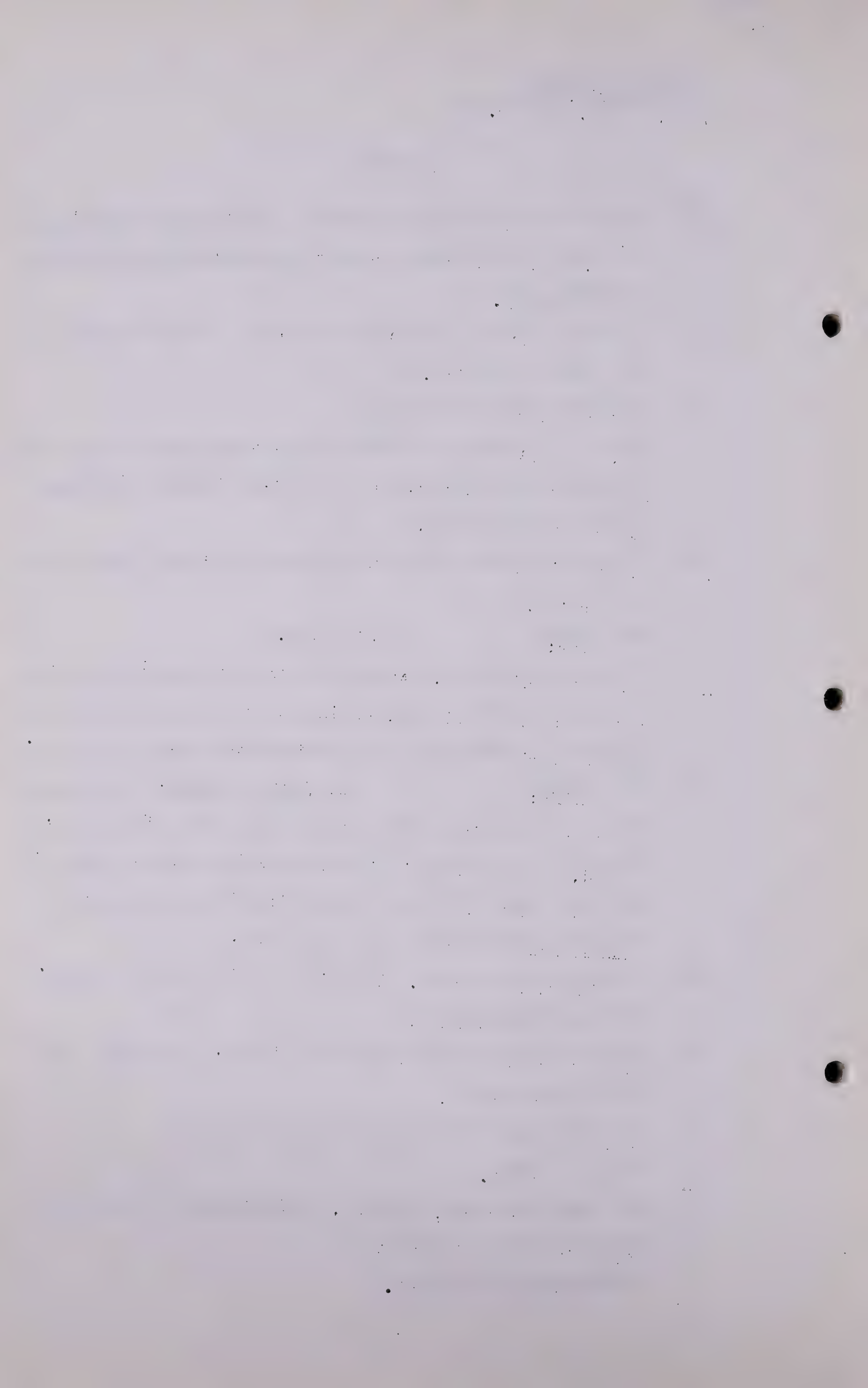
A There were two fellows went out there. Two wells were drilled out there.

Q That was shut down and shut in for years?

A That is right.

Q And then acquired, I think, by Northwestern about the time it took this land?

A I think that is right.



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1303 -

Q Now, I understand that at that time or earlier you had been looking for some gas. You spoke about that in October of 1951, volume 14 of the Report of this enquiry.

A Not October 1951.

Q That is what it says here. It says "2nd October 1951" but that must be wrong. It is yesterday.

"For a long time it was considered by Mr. Slipper, who is the chief geologist of Canadian Western," and then you corrected that to "Northwestern".

A Mr. Steer made that. He was chief geologist for both companies.

Q "that the Kinsella area which had been tested with two outlying wells, that is, the old McDonald one, was probably part of a greater field, the Viking being one part of it, the eastern extension being another part of it, we held that view for a long time."

I suppose it was as a result of that view that you went out and acquired the addition, the part of the Kinsella that you bought in 1940 or 1941?

A Why, yes. Mr. Slipper was, I remember, definitely of the view that the Viking field and the eastward extension beyond the limits of the area controlled by Northwestern --

Q And you share that?

A Yes.

Q Now, did you take all of what we now know as the Kinsella field?

A No, sir.

Q Did you take all of your confined area of the Kinsella field?

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1304 -

A Some time a few years ago, I forget the year, but it seems to me three years ago, we secured from Imperial Oil an additional --

Q Oh, yes, I am coming to that. But let us go back to 1940. You bought that from Imperial Oil?

A That is right.

Q For \$3,000,000.00?

A For about that.

Q Yes, but I am talking about back in 1940 when you formed this opinion about the extension, the potential area, did you take all of the area that you now have within your proven commercial lines?

A No. I am trying to tell you that some of it was acquired later from Imperial Oil.

Q Yes, and they filed it about the time you were taking your stuff, or after you took your stuff in 1940. It was open?

A I think that is right.

Q Now, you did not regard that as either probable or possible?

A Oh, yes, certainly we did.

Q You did? Why didn't you take it?

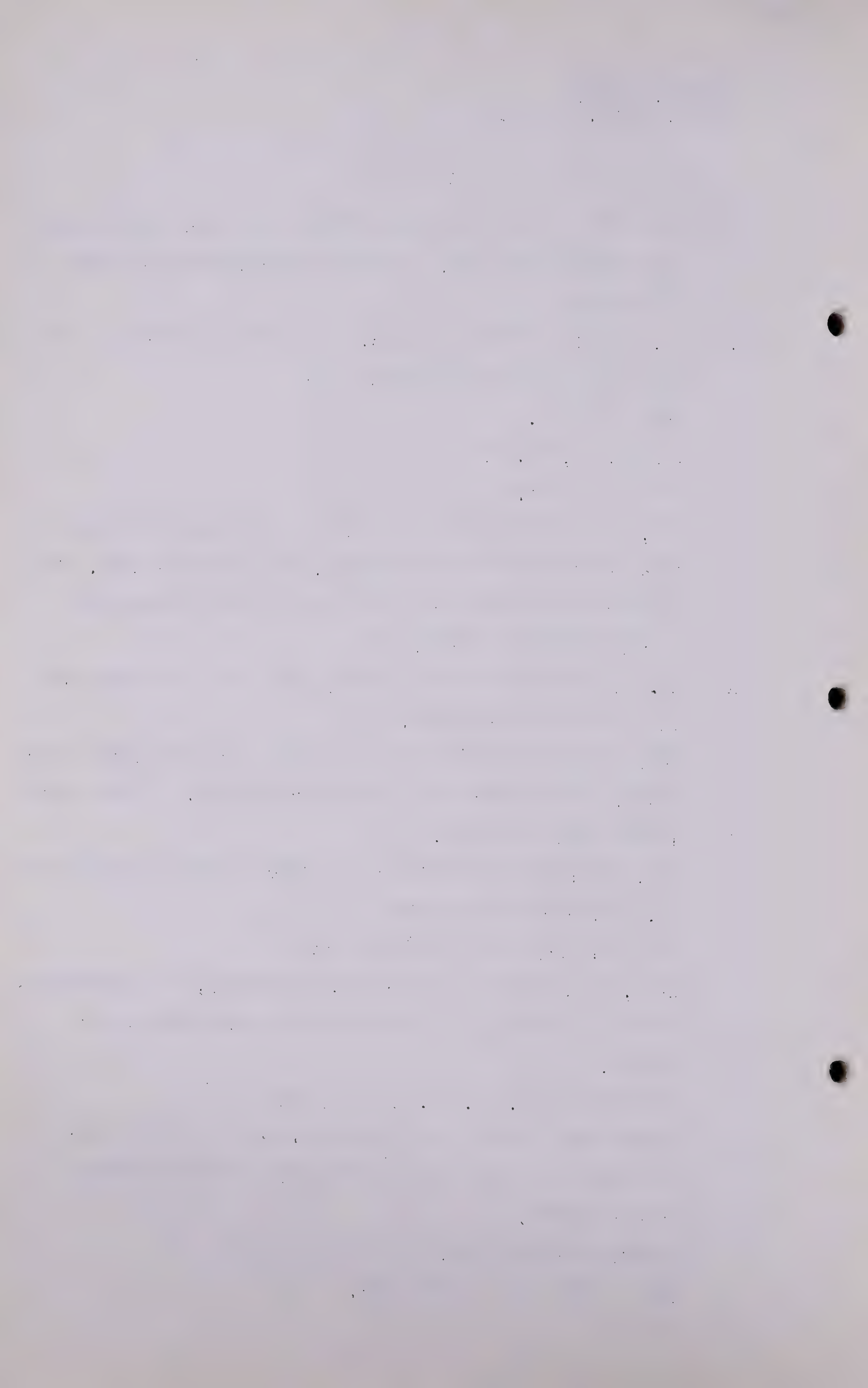
A Well, we are not as avaricious, apparently, as some people. We are of opinion we do not need more than what we are taking.

Q But it cost \$3,000,000.00 to buy back?

A At the time we took the acreage about 1940 we took such an extent of acreage that we thought would be suitable for our needs.

Q I think that is true.

A And our ability to handle it.

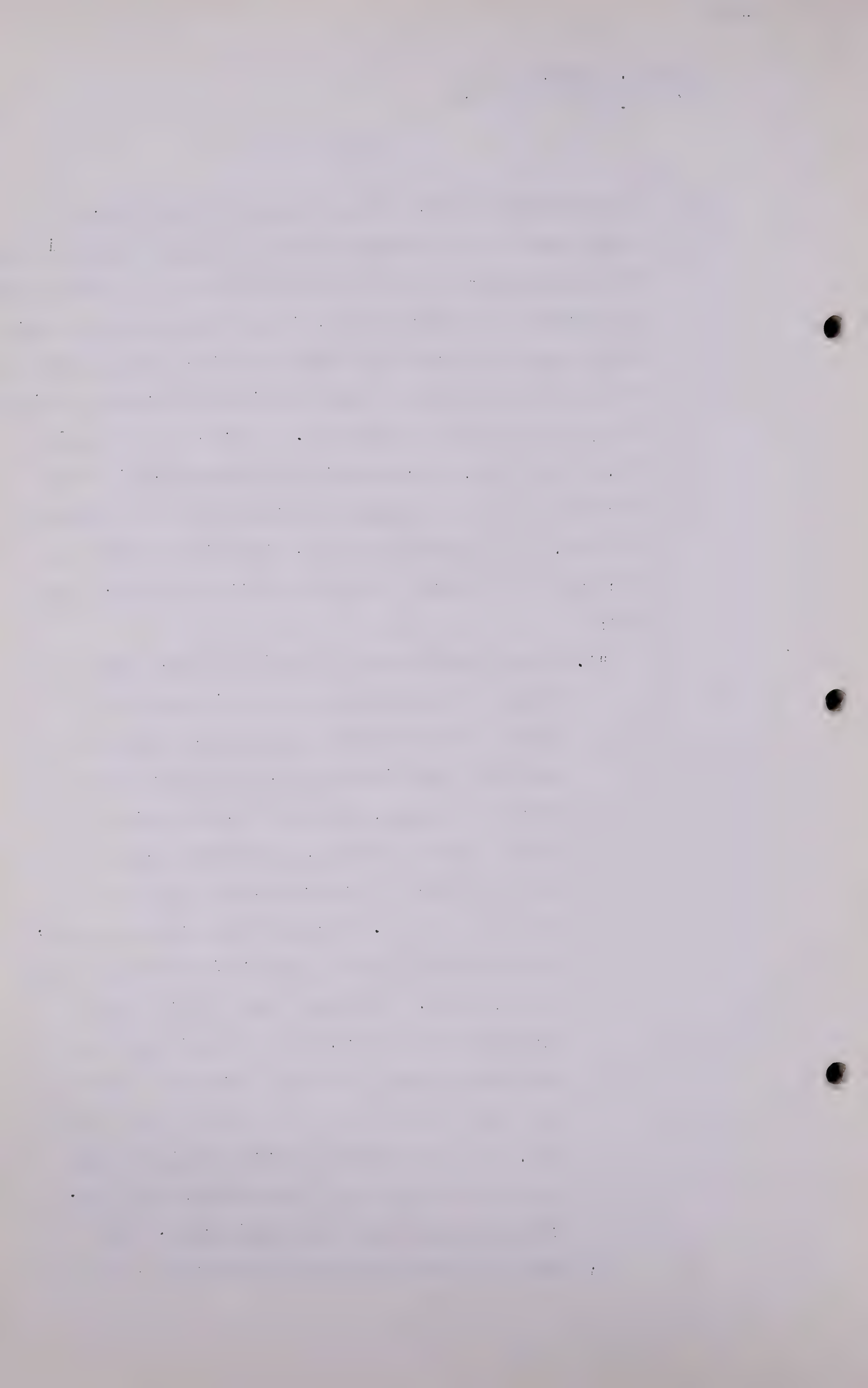


Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1305 -

Q I think that is true. When I come to think of it, I think that is true because in 1945 you gave some testimony before the Natural Gas Utilities Board and it is reported in volume 68 in February 1946, and at that time the argument going on before that Board about which this volume is devoted was how much or how little the producers of Turner Valley should get for their gas. There was a contest about that price, which was fixed subsequently by the Board at 3 cents. You gave testimony about the value of that gas, its competitive value, and this is what you said, and it is right in line now with your view, page 5576:

"A. I was thinking more along this line, what would it cost us after those 16 years have gone to build a line to Kinsella? Would our gas then from Kinsella cost us more 30 miles North of Calgary, whatever the distance of Turner Valley is South, would that gas cost us $7\frac{3}{4}$ ¢ at that point or would it cost us 8 or 9 or 10 cents. Whatever that cost would be, I would be willing to pay you for Turner Valley at that time. I can see what you can call a limiting factor here, what the gas might be considered worth. The more practical limit is what will it cost us to go and get some natural gas, not a speculative, dreamy thing but what would it cost us to go out and buy this gas. We do not know what that would cost. But ; . there is awfully good gas in Kinsella, recog-



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1306 -

"nized as sufficient for all the needs of all the cities in Alberta for more than 30 years, Edmonton, Calgary, Lethbridge and all. That being so and there is gas at Princess and here and there, I would not be willing to agree, Mr. McDonald, that the gas you are conserving is worth any more than that same gas would cost us if we got it somewhere else and at the time of that cost."

So I can see that you did not take more acreage because you thought your needs were met.

A That is what we thought.

Q Now, the rate base of the Edmonton company has an amortization structure, I think, of 30 years?

A Fixed by this last decision.

Q This last decision, I think?

A I did not follow that decision but I believe that is correct.

Q And the rate of return is $7\frac{1}{2}$ or 8 per cent?

A I think it is $7\frac{1}{2}$.

Q And that is after a thing called taxes?

A I think that is correct.

Q And taxes take 50 per cent?

A You know, I don't. I will assume it if you say so.

Q I wish it were just an assumption. So if the rate base is $7\frac{1}{2}$ per cent, it takes 15 per cent to carry a capital asset, that is what it costs the consumer?

MR. STEER: Are you sure that mathematic is right? I am not.

MR. PORTER: Maybe neither you nor I can add.

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1307 -

MR. STEER: Well, I think it not a problem in addition.

MR. PORTER: Well, I think it is very simple. You have got to return \$15.00 to keep \$7.50. Mr. Brownie can tell us, or Mr. Davis can tell us.

MR. STEER: First of all, you have got to find out the basis. The bond interest is deductible.

MR. PORTER: It is still $7\frac{1}{2}$ per cent of the capital employed. The difference between the bond interest and the rate of return. It is not a rate of return of the equity after bond, it is rate of return on the capital employed.

Q Now, we paid \$3,000,000.00, I think you told me?

A I did not tell you, you told me \$3,000,000.00.

Q Well, I will tell you.

A How much?

Q \$3,000,000.00.

A I don't think you know.

Q Well, let us assume it was \$3,000,000.00.

A That is fine.

Q You do not know, the Board and I know.

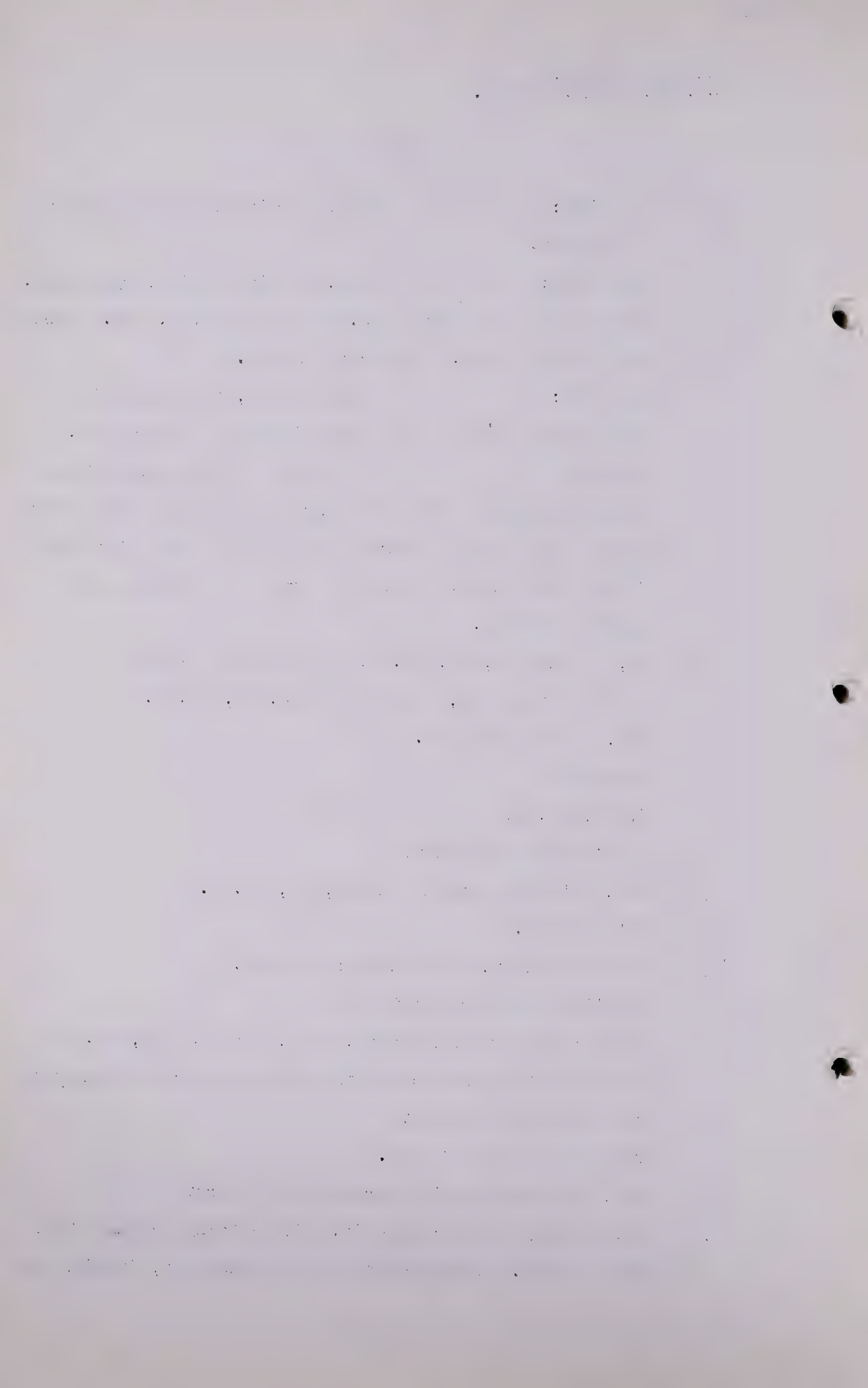
A Does the Board agree with you?

Q I will ask them in argument. Now, that \$3,000,000.00 has got to be paid back by the gas consumers of Edmonton over the next 30 years?

A Over some period of time.

Q Well, the amortization period is 30 years?

A Yes, if they never change it. Those things change from time to time. Assuming they never change it, it will be



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1308 -

amortization over that time.

Q I will go with you. It has got to be paid back by the Edmonton consumers?

A I think that is fine.

Q And while that gas is out there unused he has added to his gas bill enough money to provide $7\frac{1}{2}$ per cent plus taxes on the money in that gas annually?

A That sounds all right. Now, you wonder why we do not go out and get another half trillion feet.

Q I do, because it looks to me like a whale of a deal. So the Edmonton gas consumer at 15 per cent a year, which is the return plus taxes, is going to pay 105 per cent of the costs each 7 years, isn't he?

A I do not follow that one.

Q Well, let us take 15 and multiply it by 7.

A What is the 7?

Q 7 years.

A Where do you get 7 years?

Q Well, I am coming along to it, to divide 7 into 30 four times.

Q Does 7 go into 30 four times?

Q Four times and a little over.

A I do not know what you are talking about.

Q Well, I am afraid it would be millidarcies when we got a little pressure.

A I am honest about it, I do not know.

Q I will tell you what I am talking about, Mr. Davis.

A Yes?

Q We have got \$3,000,000.00, on my assumption, of capital

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1309 -

in a gas field, we have got a rate structure in which the amortization takes 30 years, we have got a rate of return of $7\frac{1}{2}$ per cent, and we have taxes of 50 per cent or the equivalent of the return. Now then, these are all assumptions so that we won't have any discussions about them, but I am suggesting to you as a rate-making advisor to utilities --

A I beg your pardon, I never have passed as a rate expert.

Q Well, I have got two volumes of your testimony there arguing about it.

A That is another thing.

Q I see.

A I am like you, I do not know.

Q Well, I am rather interested in having that statement on the record, and I think it is frank and I think it is honest. Well, you do not know anything about rate bases then?

A I do not go that far.

Q Well, I just want you to go this far, and it is a little bit of arithmetic, it is going to cost the consumers \$3,000,000.00 to amortize that over whatever period it gives and that has got to come out of the rate?

A That money should go back to the people who put it out.

Q Exactly, and then they should have a rate of return while it is out, shouldn't they? That is sound?

A I think so.

Q And the State, whether we like it or not, should have taxes?

A They should.

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1310 -

Q So the consumer, whether he likes it or not, has got to pay taxes and rate of return and amortization?

A I would think so.

Q Now, on my figures, $7\frac{1}{2}$ per cent for taxes, $7\frac{1}{2}$ per cent for return, add up to 15 per cent each year. Now, you will have to have some discount for progressive amortization and I do not know what that is, but on \$3,000,000.00 as long as it is outstanding the consumer is going to pay 15 per cent per annum in taxes and rate of return?

A On the remaining.

Q On the diminishing balance?

A Yes, I think so.

Q And the longer it stands out the longer it goes on?

A That is right.

Q What I was doing a while ago, and leaving aside the diminishing return idea because I am coming to that, at 15 per cent a year the capital is equalled in a little under 7 years. 7 times 15 is 105.

A Leaving out the diminishing phase?

Q Yes. Now, the diminishing base you and I can not talk about at the moment until we know the rate of amortization of the capital asset. Now, the reason I am going into this, Mr. Davis, is that in Mr. Steer's examination of Mr. Trostel he had something to say about the gas near Edmonton and the duty to commit it to Edmonton. Now, there is a lot of gas near Edmonton in smaller and larger fields, is there not?

A There are a lot of smaller and larger fields. There are two large ones.

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1311 -

Q It is a territory of sufficient merit that your clients are drilling in it?

A I think so.

Q Now, would you propose, assuming a supply is there for the Northwest Utilities, to tie it on or let it sit?

A Why, I am in favour of tying it on.

Q And let Kinsella sit?

A Keep them both on.

Q Oh, well, now --

A Oh well now what?

Q We are talking about 30 years now.

A You are talking 30 years. You asked me what I thought about tying on some more gas.

Q You will take all the gas you can, won't you?

A Up to what we need.

Q And leave Kinsella for the future?

A I think it would be pretty good to have a reserve supply there if we paid \$3,000,000.00 for the Imperial Oil part of it. I think those people that gave $7\frac{1}{2}$ per cent of a penny --

Q 15 per cent.

A I am going to say $7\frac{1}{2}$ per cent of 1 cent, to their Government to help run things, and another $7\frac{1}{2}$ per cent of 1 penny to the guy that put up the penny in order that they might have gas for a long time. I do not see where the people have such a kick, even if you have.

Q I haven't any kick. I just wanted a comparison between the fellow that is going to have some gas in the ground and the fellow who is behind you Utility boys.

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1312 -

A If you had not had good management up there you might have paid 2 cents instead of 1 cent.

Q If we confined the field and eliminated probable and possible we might have got it to an infinitesimal fraction of a cent. I am just wondering whether it is smart or wondering whether it is not, this conservatism question, this thing that eliminates the probable. What do you say as to the soundness of this approach?

A I think we get around too fast. You jump from one subject to another. A minute ago we were talking about 15 per cent and we never finished it. You have just got me now talking about the probable.

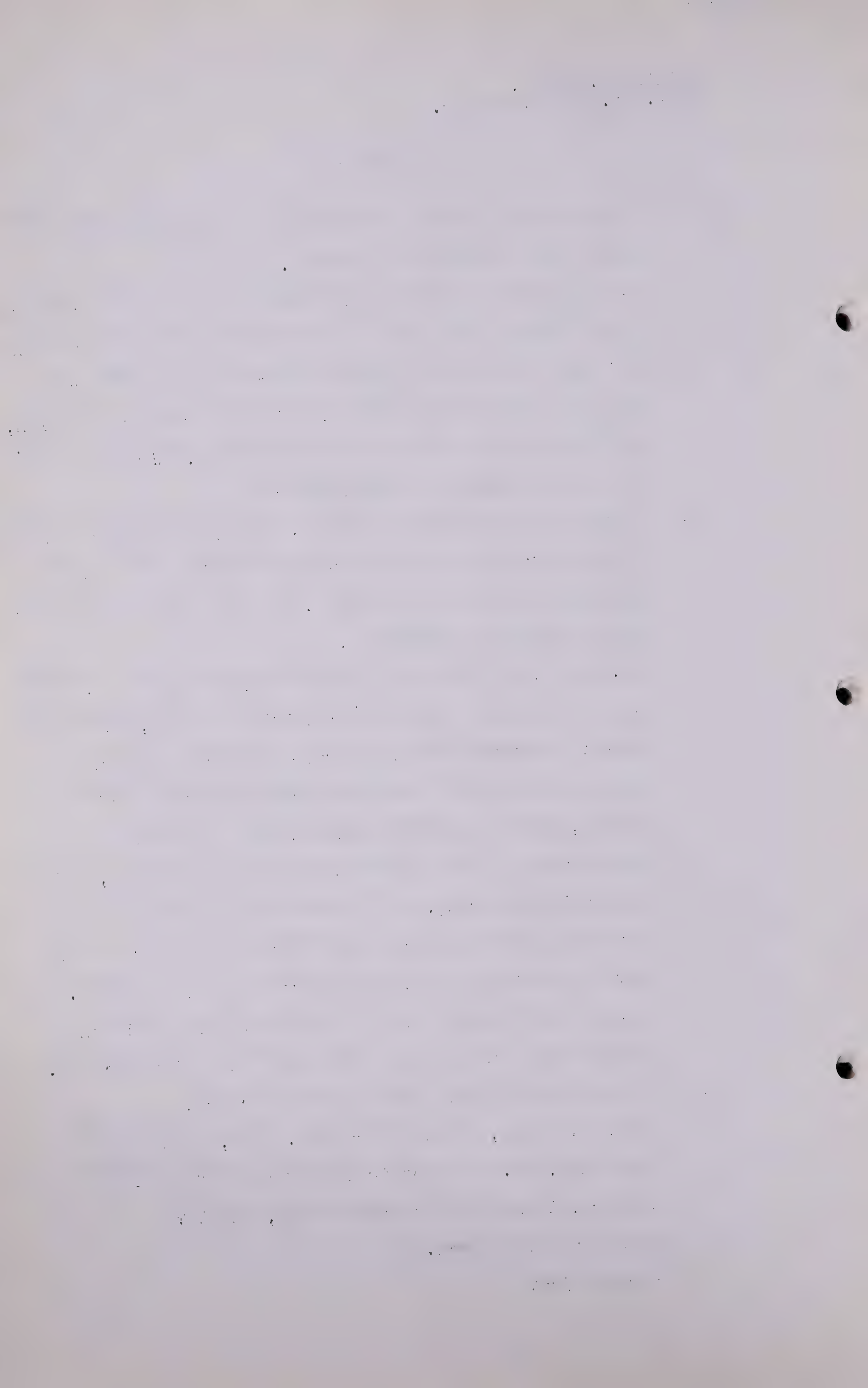
Q Mr. Davis, yesterday you qualified yourself in a limited way but I believe you were qualified earlier, but in the opening statement which you made yesterday you gave a dissertation on the constitutional law of the United States, which I think was right, and a subsequent dissertation on the constitutional law of Canada, which was obviously wrong, and I suggest to you that when you talk to me about going around that as a lawyer I will stay in my field and as an expert you stay in yours, because if you give any more constitutional opinions around here I am going to make you take out a licence.

A Do you think I would have a good practice?

Q You bet. Well, so much for that. Now, when you got this \$100,000.00 a year to look for gas for Canadian Western, it was not too much money, was it?

A It was not very much.

Q For the job?



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1313 -

A It was not very much money.

Q And it was a big country?

A It was a big company?

Q A big country that you had to search in?

A Yes.

Q And if you had got gas very far from the line it was going to cost a lot of money to build a new line, wasn't it?

A I would think so.

Q So I am just assuming, and I think it is fair to assume, that when you began to look for gas, having regard to the shortage in Turner Valley, you looked as thoroughly as you could in places adjacent to the line in order to minimize the cost?

A Well, we naturally were interested in gas nearby if it were there, if we could find it.

Q And you got down to Foremost, didn't you?

A Foremost was found, as I recall it, prior to 1925.

Q I guess maybe that is right. And you have been using Foremost, haven't you?

A Using it for peak only.

Q For peak. Was there anything peculiar about the performance of the Foremost reservoir in the way of it seeming to re-pressure itself at all?

A When you say "peculiar", there are many fields that act exactly or essentially the same as Foremost has acted. There are many fields that do not. Now, which are we going to call peculiar?

Q I will tell you what I have in my mind. I understand it had a repressuring characteristic that at one time made

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1314 -

you or some of your officers feel there might be some water intrusion, a water drive. Do you recall anything of that?

A I do not know anything about my officers, what they thought about it.

Q Well, I can not ask you that. What did you think about it?

A Well, the last studies I made of Foremost and has occasion to reduce to written form, it seems to me was about 1948 or '49, and at that time I observed that the rate of gas production per pound decline in pressure had been a fairly straight line for some years, and then Foremost was practically shut in for a period of years and during that shut-in period the wells regained their pressure to the extent of probably 35 per cent the first year, the second year -- I am just giving you rough figures -- but essentially 20 per cent, the next year 15, next 10, and 5, 4, 3, 2, and in that study I attributed that to equalization of gas in the reservoir rather than to water intrusion.

Q That is this migratory movement?

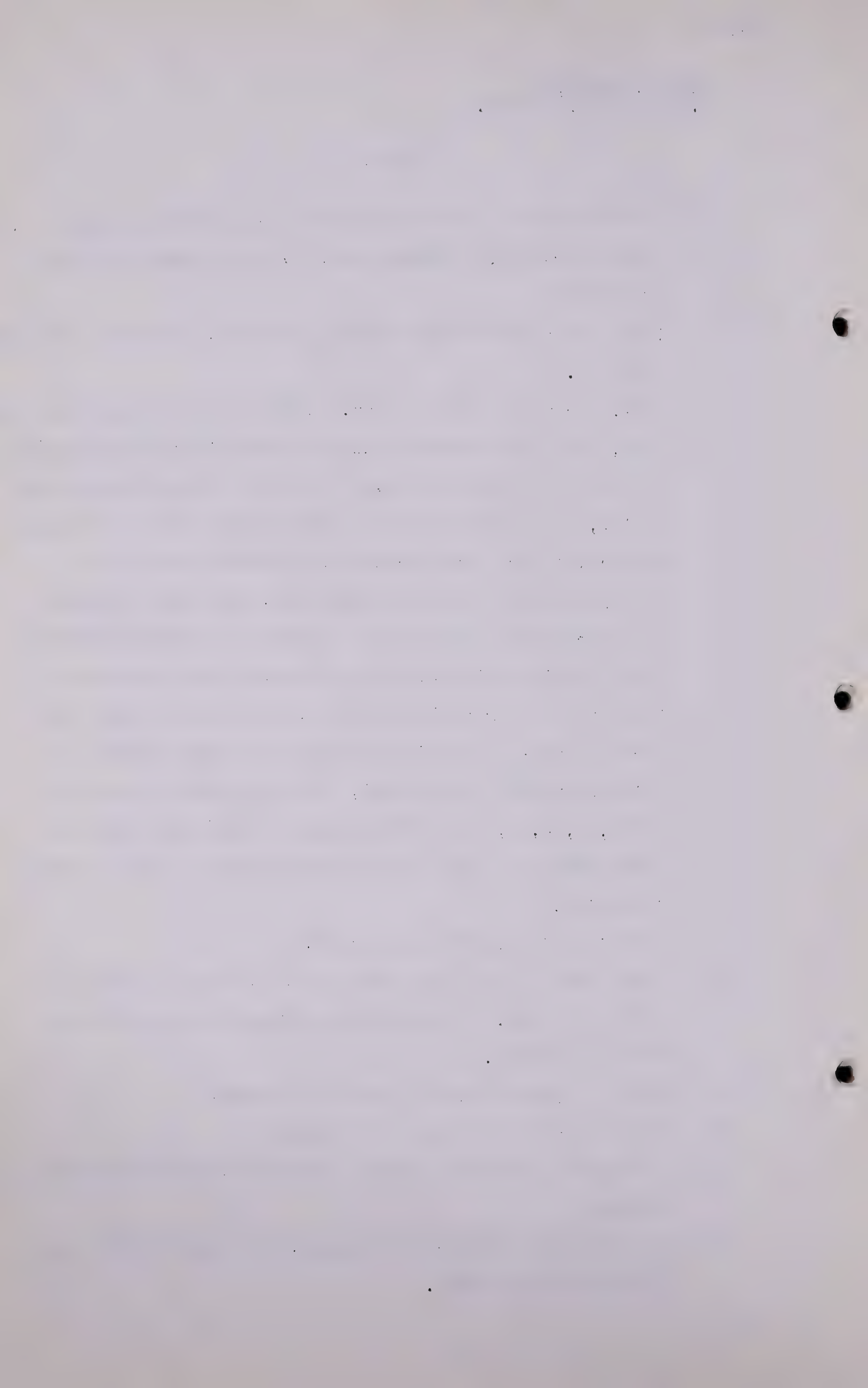
A That built up the pressures in the old Viking field in 1950 over 1949. The migratory movement of gas was all from gas fields.

Q That is what we can not have at Kinsella?

A That is what we do have at Kinsella.

Q I thought there was a place in Kinsella where migration stopped?

A Out near the Saskatchewan border, out there in that so-called possible area.



Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1315 -

Q I see. That is where it stands up like cord-wood, eh?

A Must be.

Q I was just wondering if you had the Foremost field from 1924-1925 and you had a line down there near Turner Valley which was scaring us all to death --

A That line was there. I think it was there in 1925.

Q Now, having had a look at this exhibit that we have had here and all the evidence we have had, do you agree that Pakowki Lake may easily be an extension of Foremost?

A Inter-connected as a gas field.

Q Well, let us say a sand connection with some thin sand between them?

A There may be.

Q Yes, but you did not go on out there because you got thin sands on the edge of Foremost when you drilled it?

A The reason at that time, we had the Foremost field and in 1924 I believe Canadian Western made a contract with the Royalite Oil Company for a gas supply at Turner Valley, which looked at that time good and sufficient for a great many years, we did not see any need of going south of Foremost.

Q And that contract was exclusive?

A Well, I could not help that it was. We thought that Turner Valley was going to carry this picture for a great many years and we also at that time, and I recall visiting several Foothills structures with Mr. Slipper, among others, Jumping Pound, and I was not aware of the enormous over-thrusts out here in front of the Foothills. I did not know that Jumping Pound could not be developed as easily

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1316 -

as Turner Valley had been developed. I did not know that. I thought that Jumping Pound in 1925, and so wrote in my report, would be a source of gas supply when Turner Valley was no longer sufficient. It took 20 years for the drill to find that stuff.

Q Now, I am talking about a little later time than that. I am talking about the Hearing in 1931 in which all that went by the boards because of the imminence of exhaustion and the expressed alarm of the Board and the grant of money to you at the cost of the consumer to search for gas. I am not talking about 1924 and your binding contract with Royalite. What did you do in Foremost after the 1931 Hearing with the money then available to see if there was any extension of that into what has become Pakowki Lake?

A We did not do anything.

Q You did not regard that as probable or possible?

A Well, we regarded it as an area at the distant end of our pipeline system. We wanted gas closer by.

Q Well, you had the pipeline system down there.

A Yes, but incapable of serving the growing market.

Q I see. So it was not any geological reason, then, that kept you from getting Pakowki Lake?

A No.

Q Are you serious about that?

A I do not think we ever seriously considered Pakowki Lake.

Q Was it because you left it out of the probable or the possible?

Ralph E. Davis,
Cr. Ex. by Mr. Porter.

- 1317 -

A Well, I do not know how serious you are.

Q I am serious. It was sold for \$10,000,000.00. It would be an interesting source of supply for Calgary. It is now going out of the country. I think it is that serious.

A When Northwestern acquired for what you say was \$3,000,000.00 --

Q I have no criticism of that deal, I think it was a good deal.

A When they acquired 300 billion feet for \$3,000,000.00 and somebody else paid \$10,000,000.00 for 400 billion feet, well, you sit here and quarrel about the way the Gas Company runs its business.

(Go to page 1318)

R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1318 -

Q I am not quarrelling about the way the difference lies?

A Why are you quarrelling?

Q I am not quarrelling.

A Well, it looks like it.

Q No, I am not quarrelling, I am talking about probable and possible, I am trying to explore this thing, I am not quarrelling.

A You are suggesting that maybe the greatest oil field in North America, East Texas, should have been mapped by geologists before they found it.

Q That it should have been?

A That it should have been.

Q I do not go that far afield. Yesterday you said something about a body that functions in another country that you described by letters that we use as an abbreviation for secretary, a group of people called the S.E.C... .

MR. STEER: I recall calling them Securities and Exchange Commission.

MR. PORTER: It is in here, I see your sentence in here, Mr. Steer.

Q That was a body created by Congress as the result of some disclosures made by inquiries of Congress in the Roosevelt days, was it?

A I think so.

Q And it is intended to prevent frauds or compel disclosure, is it?

A And many other things besides.

Q Now, I got the impression, and I want to be sure that that is what you intended to convey, that they are not a bit interested in an export application from any of these

R. E. Davis,
Cr. Ex. by Mr. Porter.

- 1319 -

companies and would not finance it unless they showed only proved reserves?

A Wait just a minute, sir. They do not finance anything, sir.

Q They would not permit it to be financed, I will put it that way?

A I would not say they would not permit it to be financed.

Q You mean they would not give a certificate allowing it to be financed?

A If a company found it necessary to go to the S.E.C., the Securities and Exchange Commission . . .

Q Yes?

A If the circumstances required them to go there, I say to you that based upon my experience, particularly of recent years, the Securities and Exchange Commission would require the deletion from any geological report of any gas reserves set up in figures called proven.

Q Called "probable"?

A Called "probable" or "possible".

Q Yes? But the fact is that in such circumstances they would probably do what they have done with you in new fields, take all of your geological evidence and satisfy themselves about what ought to qualify as proven, wouldn't they?

A Well, how they do it after they have talked to me, after they have read my report, I would not know, but I do know that I have in several instances, where I thought it not possible to call the entire reserves proven, but that I did think half of it was proven and I thought that the remaining half could be described as probable,

R.E.Davis,
Cr.Ex. by Mr.Porter.
Cr. Ex. by Mr. Bredin

- 1320 -

I have had the S.E.C., say "Take out that stuff called probable, take it out".

Q Yes?

A "Or we will not grant a certificate."

Q But they had had a look at it?

A Pardon?

A They had a look at your material where you have a new field?

A They had a look at anything I gave them.

Q Thank you, sir.

A You are welcome.

.....

CROSS-EXAMINATION BY MR.BREDIN:

Q Mr. Davis, have you made any survey of the Bailey-MacKidd or the Bailey Olds well and the Shell-Mackidd well with relation to serving the Canadian Western system?

A I have not.

Q Or any of the discoveries in that area?

A That is right.

Q Can you suggest how they might be employed by the Canadian Western system?

A Well, if the Olds discovery turns out to offer a supply of gas sufficient to justify a pipe line, let us suppose it turns out to be a major discovery, my thinking on it is that I would like to see a pipe line that would not only tie that source of supply into the Canadian Western's system, but also tie it into the Northwestern Utilities' system. That is, if it is a good big thing. Now, if it is something relatively minor, of a relatively minor

R.E.Davis,
Cr.Ex. by Mr. Bredin

- 1321 -

size, and it were worthy of a line to it, I think it would be a good thing to have it tied in as a source of supply.

Q Would it be possible to do that and cut off in the meantime the supply from fields at Bow Island, say, and Foremost?

A Yes. So far as Bow Island and Foremost are concerned there, they are, and for some years past have been, used only when the gas available from other sources was insufficient. So that if we took on gas from Olds, for example, and there was a sufficient amount of gas to carry us through the cold winter days, I believe that common sense would dictate holding back the gas at Bow Island for emergencies. The gas at Bow Island, you know, costs us some money. Just last year we paid 10 $\frac{3}{4}$ cents for more than a billion feet to put into that storage, and when we take it out this winter it will be high-cost gas, because it will not only have been paid for, it will have been pushed into the ground, it will have been taken out of the ground, and carried to Calgary, a part to Calgary and a part to the Lethbridge area.

Q Yes?

A Now, that gas should remain in the ground for emergencies. I would like to have an additional supply of gas at Olds myself, or at MacKidd, or at both.

Q I think Pincher Creek has been pretty well covered, but I think you did say, and I suppose you still say, that Pincher Creek is not a highly desirable field for Calgary's supply, is that correct?

R. E. Davis,
Cr. Ex. by Mr. Bredin.

- 1322 -

- A Well, at this time, my friend, as I have tried to make my position clear, I would not at this time think it a particularly attractive deal for Canadian Western to build a pipe line down to Pincher Creek, pay a price for the gas that would be a suitable and fair price, and have the, oh, let us say, \$8,000,000.00 or \$10,000,000.00 added to the rate base. I would rather see Olds or these newer areas prospected until we know that they are not any good. When the time comes, and it is soon enough, : if we have to make a move to protect these markets, that is one thing. However, I do not think it is a move to make right now.
- Q Have you had any experience in the Texas fields as to how the exported gas from Texas had increased, or otherwise, the local price, if it has affected the local price in any way?
- A I think I am familiar with that. In 1940 the United Gas System were buying gas in the Texas Coastal fields usually at a price of 3 cents, in the Coastal fields in Louisiana at a price of 4 cents, and in Mississippi at a price of 5 cents, and the difference in those three figures was due to the proximity or nearness to markets. The gas in Mississippi was worth more than gas, generally, along the Texas coast, because to supply markets in Mississippi, Mobile, Jackson and on east to Pensacola, Florida, most of the gas had to come out of Louisiana to do that job. They had to transport it the shortest distance that they could pick it up in Mississippi. Now, that was in 1940. The average price, if we were to take it right today, the same system would not reflect recent prices because

R. E. Davis,
Cr.Ex. by Mr. Bredin.

- 1323 -

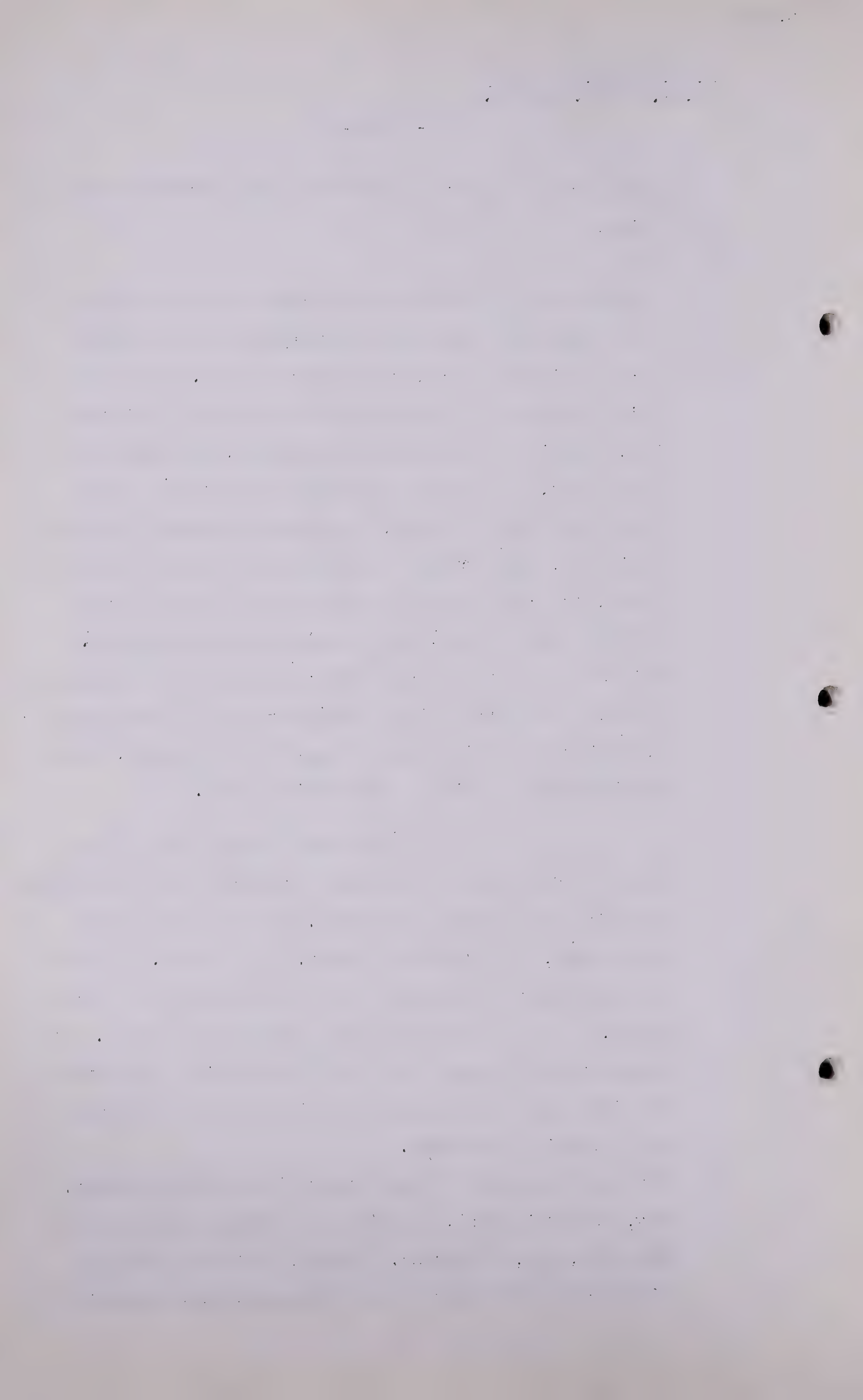
there are old contracts that are still carrying that price.

Q Yes?

A But the new gas purchase contracts being made today in the Texas Gulf Coast are generally from 8 to 9 cents for the first 5 years, gas measured at 14.65, and the price stepped up each 5 years in the amount of 1 cent. Now, that is rather a typical contract, starting at 8 to 9 cents, and each 5 years going up a cent. There have been contracts made, one notable contract in South Louisiana, which called for 10 cents for the first 10 years, 12½ cents for the next 10 years, and 15 cents for the next 5 years, and no price fixed thereafter. Prices of gas on the Gulf Coast have advanced very materially and sharply since the inter-state lines began expanding and taking lots of gas. In other words, today on the Gulf Coast it is a seller's market.

You heard a man on the witness stand a few days ago say that a contract has been entered into for gas delivered at Dumas, that is away out in West Texas, the northwest corner, at 15 cents. Gas in that territory three years ago was obtainable at 7 or 8 cents. I do not know what the end is going to be, but these are all things that people either find out after the lines are built or they can look around and find out a little beforehand.

Q How does the price of gas compare in the local market, say, in Mississippi, say with the market at the end of the line, say, Pensacola, Florida, is there just the difference with regard to the transportation costs in



R.E. Davis,
Cr. Ex. by Mr. Bredin.

- 1324 -

the price, or are there other differences?

A Mo. Every inter-state line is under the regulation of the Federal Power Commission, and it is their duty to see to it that the company does not earn a return greater than that prescribed. I do not have in mind the Pensacola area, but I can say that gas picked up in the Gulf Coast of Texas by Trans-Continental Pipe Line Company at an average cost of $8\frac{1}{2}$ cents at this time, it is carried to New York City and sold there at the city gates, not through the distribution system, but just sold in wholesale quantities at about 31 cents. Now, the difference between $8\frac{1}{2}$ and 31 is the cost of operating the pipe line, depreciation, pay taxes, etc., and the rate of return, calculated in advance, and then checked by the Federal Power Commission occasionally.

Q Does the Federal Power Commission make any provision to assure that local consumers are not paying the cost of pipe line transmission to outside outlets where the, perhaps the owner of the fields and the pipe line owner might be the same corporation, or an affiliated company? What I mean to say, there would be the possibility for a company which owned fields and transportation facilities to charge a local consumer a higher price than perhaps the actual costs with regard to serving that local consumer?

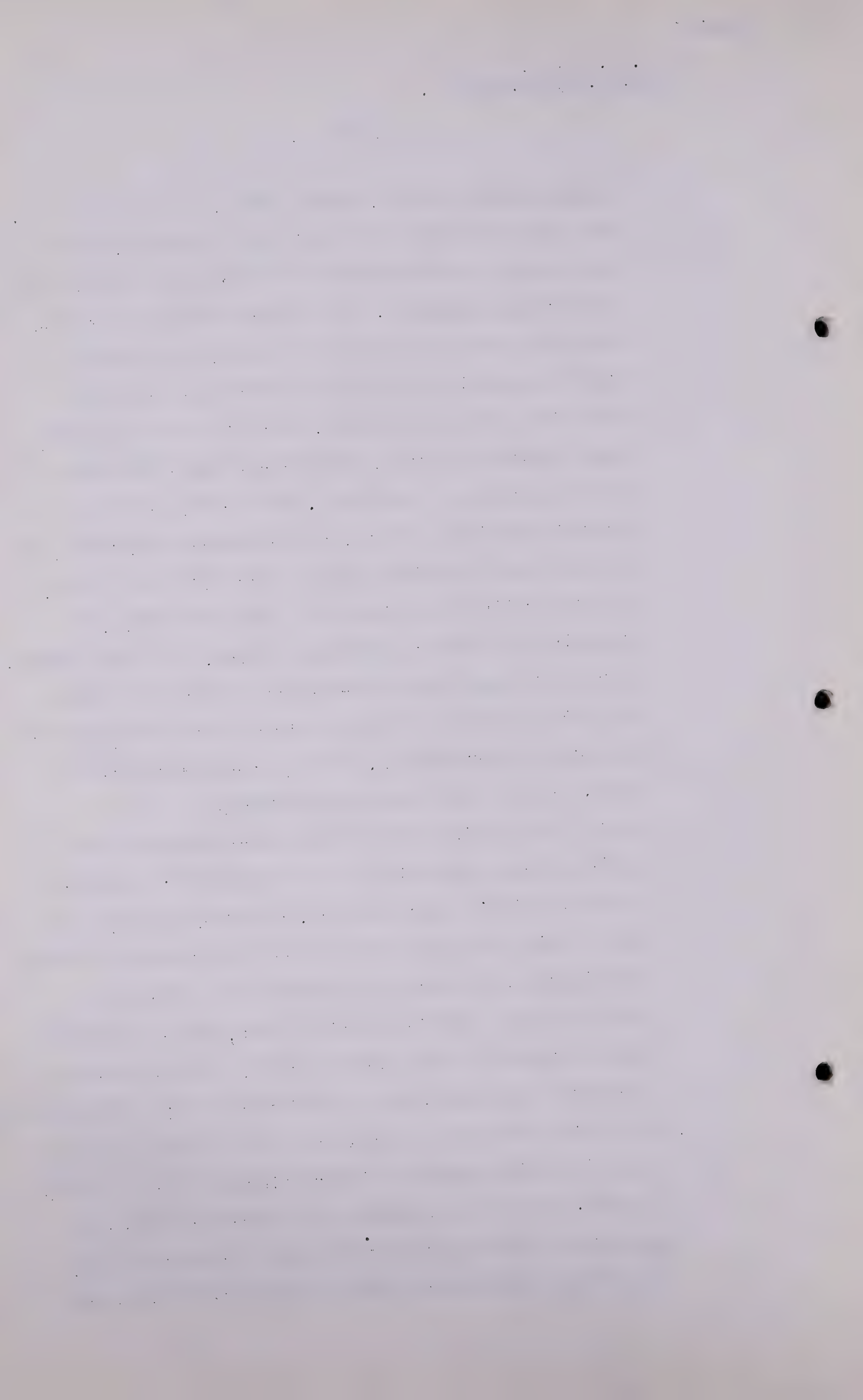
A Well, the situation, of course, is not the same in every State. However, let us take Texas, the United Gas System, The United Gas Corporation it is, it owns the United Gas Pipe Line Company, wholly owned, also the Union Producing Company, wholly owned. The Union Producing

R. E. Davis,
Cr.Ex. by Mr. Bredin.

- 1325 -

Company drills wells, produces gas, and produces oil, and they sell that to the pipe line company, and the pipe line company transports gas in intra-state business and inter-state business. The prices charged in inter-state business are under the control of the Federal Power Commission if the gas be bought at the other end of the line for resale. But if it be bought by some industrial plant, the Federal Power Commission is not authorized to interfere. And on the gas that is carried within the State, the intra-state business, the Federal Power Commission has no authority over that, but the Railroad Commission of Texas does have. So that it is a rather complicated thing, as to what extent you might suggest the out-of-state people are paying more for gas than the charge might be for the people in the State of production, if they were getting it for less. Is that what you are getting at?

Q What I had in mind was the Government expressed the desire or its expression of the Government's intention in the Premier's budget speech, and then again in connection with that an expression by the Minister of Mines and Minerals, and that is contained in a letter on page 63 of the Board's Interim Report, and it expresses the Government's policy with regard to the protection of Alberta consumers, and I was interested in the question if the rate was low enough at the end of one of these pipe lines with regard to interesting industry to enter Alberta, and I was interested in knowing whether the rate was as low or lower at the end of the pipe line, and if that were so whether or not the industry would



R.E. Davis,
Cr. Ex. by Mr. Bredin.

- 1326 -

locate here?

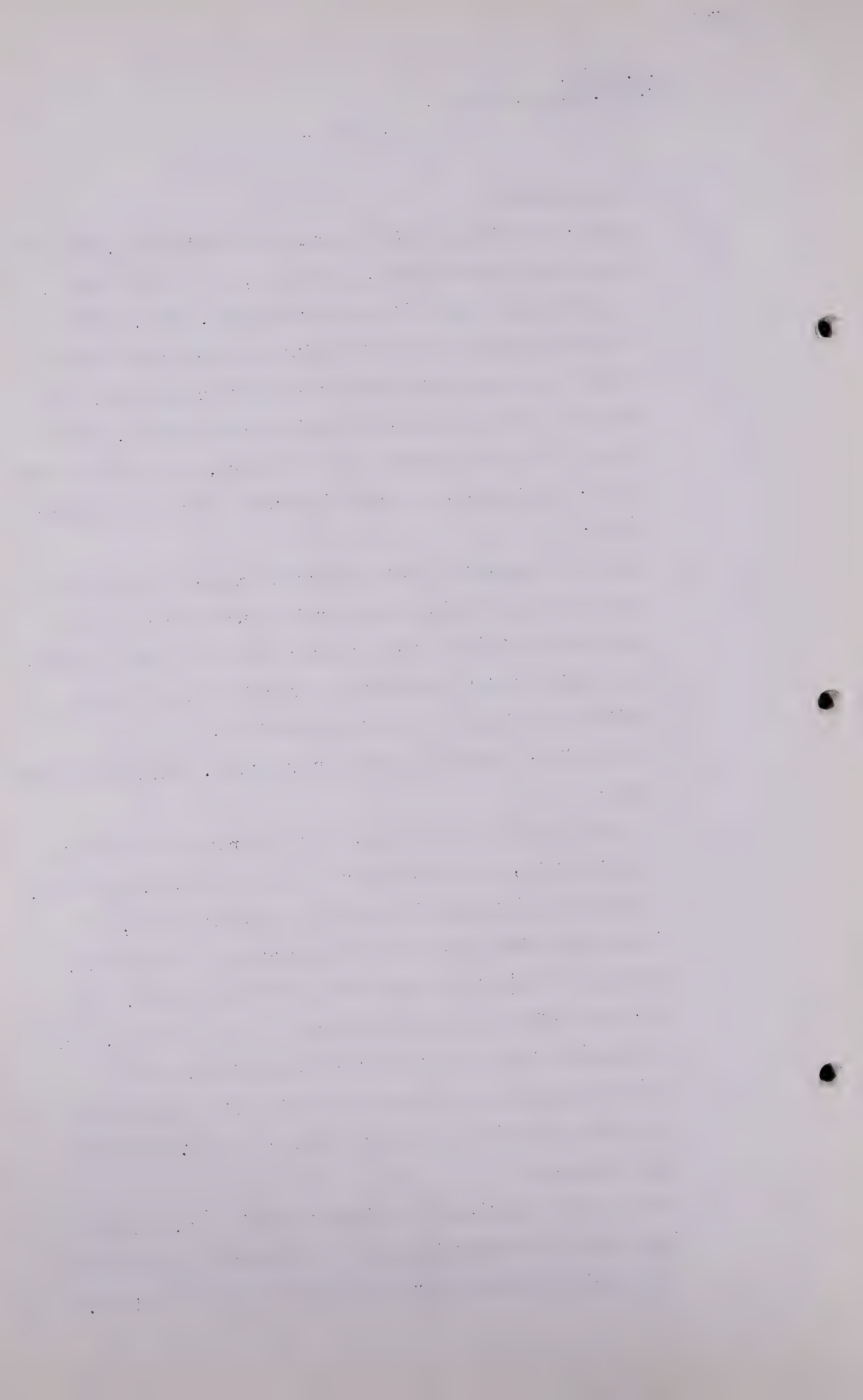
A Well, you take gas which would go to Winnipeg, that gas would cost at Winnipeg, I presume, at the city gate, 2 or $2\frac{1}{2}$ times what it would cost here. Now, if an industry wanted to pay that increased cost for fuel in order to be that much closer to Eastern markets, that would be their business administration policy, and you could not force them to come out here, if the fuel item were, let us say, of less importance than the freight item.

Q Is it not possible that the market might be such at the end of the pipe line that serving such a large demand they could do it so much cheaper and at so much a lower rate than a local consumer or a local industry could purchase that gas at, is that possible?

A I am sorry, I did not get your question. Will you repeat that?

Q I will put it to you again. If the rate were such in a large city, that is, the rate could be such, possibly, in a large city that it would be actually lower, or very much lower than the transportation differential, at the end of this pipe line than it might be here, that is, the market to be served would be so much less, that a supplier could lower his rate appreciably so as to bring the rate at the end of the pipe line very close to that rate which we had in our local area? Is that not possible?

A Not if the pipe line be a line of any length. I suppose the cost of transporting gas is something on the order of 1 cent to 2 cents per thousand feet per 100 miles.



R. E. Davis,
Cr. Ex. by Mr. Bredin.

- 1327 -

You get it down to a cent or thereabouts in certain ideal situations, where you have a large diameter line handling a big stream of gas, and handling it 24 hours a day on a 95% load factor. Those things exist. And there you can get a transportation cost of around 1 cent per thousand feet of gas per 100 miles. But if you have got a line operating on a 50% load factor, and a smaller line, you have pretty nearly all of the same expenses but only half of the gas to charge it against, and you get a cost of 2 cents per thousand feet per 100 miles.

Q That is what I had in mind?

A All right. Take a practical example. Say a fellow could buy gas for 10 cents. What would he pay for it in Winnipeg? If it cost a cent and a half or 2 cents per 100 miles, he would surely pay 12 or 15 cents more, wouldn't he, and then bookkeeping and everything else added to it, and it could not do anything about it, because it costs that much to transport the gas.

Q The advantages of the load factor and the greater supply could not offset that differential?

A You are still going to have the cost of transportation. You never get it down to nothing.

Q You have heard each of the applicants. Have any of them satisfied you as to their plan of export which would guarantee the local market an adequate supply?

A I do not think any of them have been interested in talking to me about it. Do you refer to what they have put into the record?

R. E. Davis,
Cr. Ex.by Mr. Bredin.

- 1328 -

Q Yes?

A I do not see much in the record that would be too secure an assurance, although when a fellow says "Well, we are willing to take gas and whenever Canadian Western needs it Canadian Western shall have the first right". Well, that is - he is only repeating what the Board has the right to do and what the Board's duty would be, I think, under the law.

MR.PORTER: There you are again.

A What? I was going to ask you about that again.

MR.PORTER: He is talking about Boards and you are talking about statutes. However, as long as you leave at one o'clock, I will let you practice.

A I do not know anything about that end of it, except to say that I believe the Board has the duty here to see that the home markets are served first. That is all I can tell you. And these applicants that come in here and say that they will agree that the home market may be served first have not guaranteed anything that we did not have to start with.

Q MR. BREDIN: Would it be your expectation if export is permitted, that you would be able to make any further deals such as was made with Imperial at Kinsella at the price made on that deal?

A No. The answer is "No".

Q I believe Mr. Smith suggested to you that discoveries, the discovery rate in Texas compared with the rate here, that discovery rate compared with the rate in Texas, but don't you think that that factor should be taken into consideration, the factor of the rate of discovery

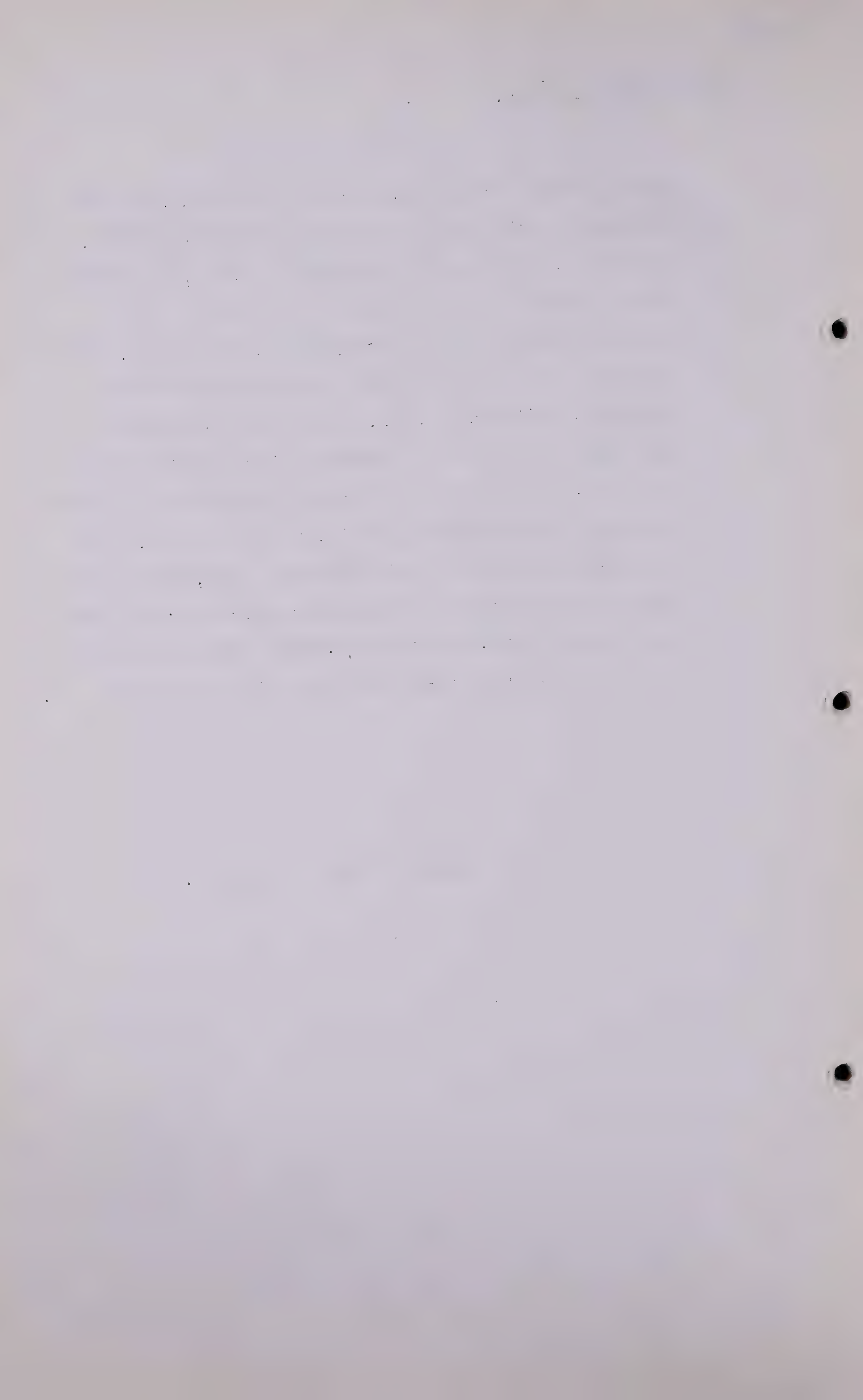
R.E.Davis,
Cr. Ex. by Mr. Bredin.

- 1329 -

with the rate of withdrawal, that is, Alberta has not been using a very large percentage of the gas, which would be used if export were granted, and should that not be taken into consideration?

A I do not really follow your thinking there. But I will tell you what was left out of the discussion between Mr. Smith and myself, that the gas found in Alberta has been found by people looking for oil, the most of it, and the gas found in the United States has been found by people looking for oil, the most of it. And in the development of oil in Texas, Oklahoma, and Kansas, there was an enormous reserve of gas accumulated on the books, so to speak, before it became feasible and practical to build there long-distance pipe lines to any extent.

(Go to page 1330).



R.E. Davis,
Cr. Ex. by Mr. Bredin.
Cr. Ex. by Mr. McDonald.

- 1330 -

A Take the situation in West Texas where development for oil had brought forth a total discovery of some 25 trillion feet of gas. Until the California markets found it practical and reasonable to pay a price for gas brought to Los Angeles and San Francisco so the pipe lines could be built to take gas out of West Texas, that gas was blown in the air. There was just lots of gas there before these pipe line projects began to take hold. The thing in Alberta is that they just have not been able to build up such a backlog of gas yet. When they do it, surely gas export is agreeable.

Q What I was getting at, we may be discovering gas at five to one with our present consumption, but if we permit export what proportion will we continue to find then?

A Well, naturally it depends on the volume of the export but it could be brought down to the ratio in the States or even less. I do not know how much the export might be.

Q I think that is all I have, sir.

CROSS-EXAMINATION BY MR. McDONALD:

Q Mr. Chairman, may I ask one question? Do I take your evidence to mean, Mr. Davis, that when we have many hundreds of millions of cubic feet blowing to the air in Alberta, then we should have export of gas? I will illustrate it this way, you mentioned 500 billion cubic feet being wasted in Turner Valley in 1930 or '31. Were you concerned then about exporting that gas to the Province of Saskatchewan and the City of Regina?

A Yes, I was interested and made studies on the feasibility of a pipe line from Alberta, from Turner Valley, to Moose

R. E. Davis,
Cr. Ex. by Mr. McDonald.

- 1331 -

Jaw, Regina, Saskatoon.

Q Yes?

A And I knew that it was a perfectly impossible thing to follow through with 400 million feet of gas going in the air and nobody willing to stop it. The Provincial Legislature did not stop it and the operators did not stop it and the pipe line to Regina was naturally out of the question, and by the time they did stop that waste of gas out there the field had gotten down to a point where again it was not a feasible project.

Q Now we have learned a lesson and seen what has happened in Texas, should we provide for export as our wells come into production rather than to wait until we have lost many millions of dollars of gas?

A I do not think gas should be blown in the air to any extent.

Q It will absolutely have to ensue if we are going to produce our oil?

A Where?

Q In this Province, unless we can export the gas.

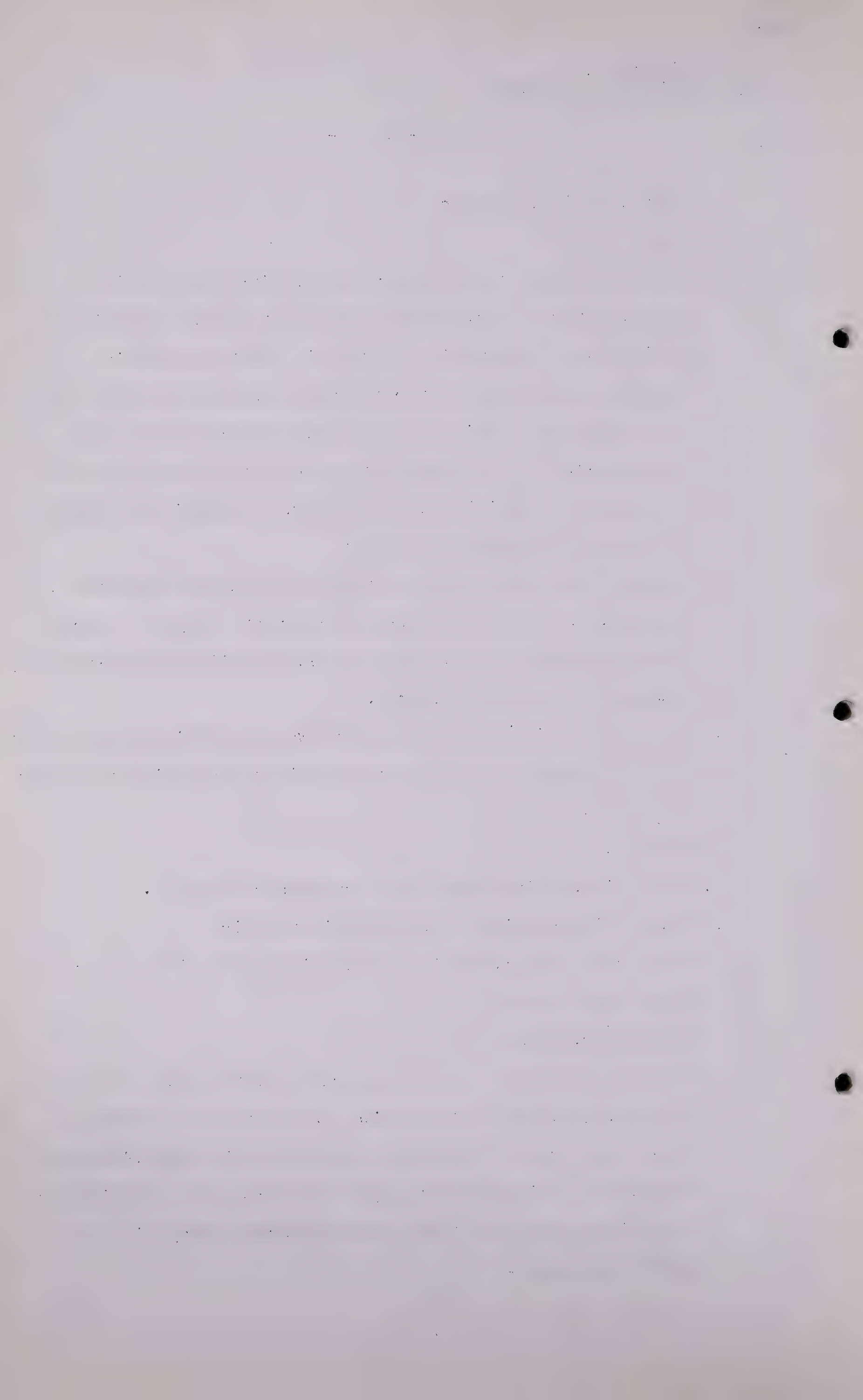
A Where is it going to be blown in the air?

Q Leduc right now, half the field is blowing in the air.

A That could be so.

Q Stettler, Bashaw.

A I do not think it is a very practical thing when a field is being developed to say "Well, we have got to corral every cubic foot of that gas from the first day," although it was done in California prior to 1930. The California Commission would not let a fellow produce any oil if he wasted his gas.



R.E. Davis,
Cr. Ex. by Mr. McDonald.
Cr. Ex. by Mr. S. B. Smith.

- 1332 -

Q May I ask you this, could gas that is now being sold in California, this 25 trillion feet, how many thousands of dollars' gas was lost in West Texas before the line was built? There was a tremendous amount, isn't that right?

A Yes, probably. This is just an approximation but I think it was on the order of 6 or 8 trillion cubic feet, more than they ever lost in Turner Valley, sir.

CROSS-EXAMINATION BY MR. S. B. SMITH:

Q I have two or three questions I would like to ask Mr. Davis, if I may. Now, how long have they been exporting gas in the State of Texas to places outside the borders of Texas?

A Well, the line from the Panhandle field into Colorado, Colorado-Inter-State Natural Gas Line, I think was built about 1925, '26.

Q Is that the first one?

A Well I was reaching back in my memory to see if there was anything earlier than that that was inter-State. That preceded the line to Chicago. It preceded everything that I can think of out of the northwest corner of Texas. Now, the southwest corner of Texas there wasn't any as early as that. In East Texas I do not know of anything earlier, as far as I can recall now in Texas.

Q 1921, did you say?

A I said about 1925.

Q 1925?

A As near as I can recall.

Q What were the proven reserves of Texas in 1925?

A Well, in 1925 I happened to write the report on the first

R. E. Davis,
Cr. Ex. by Mr. S. B. Smith.
Exam. by Mr. C. E. Smith.

- 1333 -

line, if that Colorado-Inter-State line was the first line, and the proven reserves of Texas was of no concern at that moment.

Q I am just asking you what they were. I am not interested in whether they were of concern or not. What do you think, Mr. Davis?

A Well, who knows? Who had the job of making a study of that?

Q I don't know, do you know?

A No.

Q You do not know? Where was that great backlog in Texas of proven gas before export was permitted that you referred to a few minutes ago?

A Before export was permitted or before export became a fact? They never had to permit it.

Q I see, they did not have to permit it?

A I am telling you about 1925.

Q It was in the ground?

A About 1925 export started to Denver, Colorado Springs, Pueblo. I wrote the report for that pipe line and my report on the Panhandle field at that time was 10 trillion cubic feet.

Q Yes, and what are the proven reserves of Texas now after export for years and years?

A About 90 trillion.

Q Thank you. By the way, the market for gas has stimulated the production of gas in Texas, hasn't it?

A Yes.

Q MR. C. E. SMITH: Mr. Davis, I take it that with regard to some suggestion that you may be conservative a

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1334 -

little on some of your original estimates, in your long experience I do not suppose you have batted 100% that way, have you?

A No.

Q In some cases it has been the reverse?

A Unfortunately.

Q And with regard to export in itself that does not necessarily need to mean an increase in local price, does it, in itself?

A If there were such a surplus of gas that export markets could be served without creating a real competitive situation then there might be no increase in price. If they start buying the gas that is close to Edmonton, taking it out of the Province, the Edmonton system is going to have to do something, whether they pay more for gas or just go further to get it, and the net result will be increased cost.

Q If they start using gas that you people could economically use, then that situation will arise, is that a fair way of putting it?

A Yes, sir.

Q If they use something that you cannot economically use it would not affect the price of gas?

A I would not think as long as we have any inclination to go to the Peace River country, I would not think that export of that gas would have any influence on the price of gas in the Edmonton system, certainly not for some years.

Q And that same statement, I suppose, might apply to some extent in any event to Pincher, Many Islands, Cessford, some of those other places that have been mentioned?

A So long as Canadian Western Company is not interested in

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1335 -

going to these ends, I do not think it would have any particular effect, but I do think this, sir, if a large export be granted that the Shell Company at McKidd will think twice before they make a contract with us. They will look for the maximum output of gas and the maximum price, and they will be getting it at what we can get it for under those circumstances.

Q I take it at the present moment you have not got any contract with whoever owns that stuff now anyway, from what you have just said?

A This is the field south of here. No, we do not have any contract.

Q McKidd or whatever it is?

A Yes.

Q By the way, Mr. Davis, speaking of financing, do you know Mr. Nagleson of Lehmann Brothers?

A No, I do not.

Q Have you read his evidence given before the Board at Edmonton at the opening of the Delhi application?

A I have.

Q And it struck me, to be quite frank, that his ideas about the way he will deliver his money and your ideas about the way he should are at a bit of variance, is that correct?

A They are quite opposed to each other, that is right.

Q I just wanted to make sure you had read it, Mr. Davis?

A Yes, I read all he said. I know that the Lehmann Brothers have taken a prominent part in financing practically all of the big lines in the United States. When I looked into that matter - I know I am not here to tell you about it, I

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1336 -

am just here to tell you that people should not talk too much unless they know what they are talking about.

Q Are you referring to me or him, Mr. Davis?

A All three of us.

Q All three of us. I wanted to make sure you had read his evidence because I do not think you were there, as I remember?

A I read it.

Q Now, I wonder have you got in front of you Volume 14, which is a transcript of your evidence of yesterday?

A No. I have one now.

Q Then I shan't be long with you because most everything I have thought of has been thoroughly discussed by everybody else. Will you refer to page 1187?

A All right.

Q And there at the bottom of page 1187 you refer to what is called, what I call the Fabyan field and you pointed out that you had not included that because of the fact it was serving, I think, Wainwright?

A That is right.

Q But you did say it could be considered part of the Kinsella field?

A Right.

Q If you added that to your line in 36 or 37, the map, you know what I am referring to . . .

A Yes.

Q . . . how many more acres would that add to your line, roughly?

A We can give a rough guess at that. Well, as I see it here,

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1337 -

about a township. I would say that this southerly boundary of my field, I would have extended it down through Hawkins and around near the town of Fabyan and back south of the Imperial-Scoville Lake well.

Q Roughly a township?

A That is right.

Q That is fair enough. And I do not know whether you were asked this yesterday or not, but with regard to Imperial 10, you might keep the map in front of you, that is one up west or north?

A Yes.

Q Up in that corner I do not know whether you gave us any idea of the number of acres you might add to your line, if I might put it that way, because of the information you have had with respect to that particular well. First, would you include the well?

A Well, I would just as soon say yes or no, that would be about the limit.

Q You would not quarrel too much if somebody else did?

A No, it would not matter. I might add 8 or 10 square miles in there.

Q Is there any significance with regard to your thickness? I think this is 6 feet, if I remember?

A Yes.

Q Imperial-Kinsella 10, and you list -- what do you call this line?

A 4.

Q Isopach, or whatever it is, 4 foot thickness, is it not?

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1338 -

Is there any significance in that being 4?

A Well, Imperial-Kinsella have given 6 feet. It was so tight it would not make more than 1-1/3 million feet of gas. I did not regard it as commercial. I have tried here in drawing these isopachs to map the thickness of pay that will produce.

Q Well, all I had in mind, your isopachs given here, I forget what the thickness is in here but they drop down over two feet?

A From 8 to 6 to 4.

Q And Imperial comes up to 6, is there any significance in that line?

A No, no particular significance. We had no control of thickness, no true control in this area around Viking, and I do not think I had more than a true 4 feet of pay out west there because I go into no place where a well was not worth connecting.

Q I mean, there is nothing that the Board should hear with respect to the matter I have just mentioned?

A I think it is not important.

Q Now, referring to page 1201, speaking with respect to this same well . . .

A All right.

Q . . . at the bottom of the page you said what you just repeated now, "And the Imperial No. 10, which I do not consider much of a well, a million 3, not worth running a line to at this time." -- is there any significance to the words "at this time", Mr. Davis? What did you have in mind?

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1339 -

- A Yes, I have in mind that the time may come, and I cannot tell when, that that well might be worth connecting up. The well is already drilled. It is there and it is quite a different thing to have to spend two pieces of money, one to drill the well and the other piece of money to build a line. It may be that this well would be worth hooking up in a few years.
- Q It might hook up to that in a few years but you would not drill another well of the same type?
- A That is the idea.
- Q I wanted to make sure what you had in mind there. And at page 1202, just over the page, being a layman I am not sure I understand this, I think some others may like a little information, "Well, I would say that as gas fields reached the stage that we describe as abandoned, I think we are generally thinking of abandonment for the purposes of supplying pipe line gas, and there always is a remaining amount of gas in a field, where small amounts of gas can be available. Take the Panhandle Field, when it is no longer useful to supply the big pipe lines that go out of it, I think there will be a gas supply there sufficient to take care of such cities as Amarillo and Pampas for 100 years, and maybe 300 or 400 or 500 years." By the way, how big is Amarillo and Pampa?
- A Well, I would think the combined population is about 100,000.
- Q Combined population about 100,000?
- A I think that is pretty close.
- Q And I take it they are awfully close?

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1340 -

A In the first place, Pampa is right in the gas field.

Q That "s" should be off there?

A Yes. You can go out from Pampa in any direction and you are in gas territory, whereas Amarillo lies about 10 or 12 miles south of the south edge of this field. When the time comes that Panhandle Eastern, Northern Natural, City Services and other big lines have so small an amount of gas that it does not pay to operate the thing, to keep the compressors rolling and so forth, first one well will come out of business and another one, finally getting down to a place there won't be gas suitable for that long distance transportation but there will be gas left there in that field sufficient for what I have told you.

Q And carry your local use for a long time?

A Yes.

Q That is not peculiar to Panhandle?

A That would occur in most any field.

Q MR. STEER: You illustrated it by the supply from Viking-Kinsella?

A I would say when we no longer find it a suitable thing to take gas out of Viking-Kinsella for transport to Edmonton, those little towns; Viking, Kinsella, will have gas for their use for 500 years. It did not amount to anything.

MR. C. E. SMITH:

Q It amounts to something to the people in those towns?

A That is right.

Q We have a few of those towns all over Alberta?

A And it goes when it is no longer feasible to keep taking gas out in what I call pipe line quantities, and that is

R. E. Davis,
Exam. by Mr. C. E. Smith.

- 1341 -

what I tried to shut out when I make an estimate of recoverable reserves. Northern Natural Gas Company has no interest in how much gas the people of Pampa will be burning 20 years from now.

Q Except the people of Pampa will be glad to know it is there and they can use it?

A Well, it will be there.

Q If you turn now to page 1204, just one simple question here, you remember you said that you selected 7 wells and then you gave us by way of exhibit your electrolog and your test data?

A Yes, sir.

Q Was there any significance in the selection of these 7 wells? How was it done, the ones you had the best information on or what?

A That is right, the ones we had the clearest-cut information on.

Q No significance by way of area or anything?

A No. I did not know until after they had been selected where they fell on the map.

Q I just wanted to make sure that was the reason.

A We had no thought of selecting them in a certain township. We selected them where we had got a clean-cut data, and it was yesterday morning I had Mr. Patterson help me find each of these wells on my map and I made a circle on the map to show where they were. Prior to that time I had not paid attention to them.

Q I was just wanting to be sure that that was the reason. Will you turn to page 1225?

R. E. Davis,
Exam. by Mr. C. E. Smith.
Exam. by Dr. Govier.

- 1342 -

A All right.

Q And in view of a question that may be asked Gulf, I think there is a word in here you did not intend to use or should not have been put in. Will you read the second sentence.

A Now?

Q Starting with, "The three wells that are known to be substantially gas wells could have a large volume of production. However, if I understand it correctly, they did not drill along the axis of the structure, pretty nearly in a straight line." You mean they did drill?

A Yes. They drilled along the axis, as I understand it.

Q We eliminate "not"?

A Yes.

Q They did drill?

A That is right.

Q Well I think that is all as far as I am concerned.

Q DR. GOVIER: Mr. Davis, I have three or four questions and they won't take very long.

A That is all right. The way the weather is we may not fly today anyway, I am not sure.

Q Mr. Davis, in reply to a question asked by Mr. Bredin and in reference to changes in the Gulf Coast gas price, you said prices have advanced since the Inter-State Lines went into operation, or words to that effect. Do you recall that?

A Yes.

Q Did you intend to convey the thought that prices had advanced because the lines went into operation?

A Absolutely. That is what I am telling you. Everybody

R. E. Davis,
Exam. by Dr. Govier.

- 1343 -

knows that who is in the gas business.

Q But haven't prices of all things gone up in the same time limit?

A Well, the price of oil did not go up.

Q In the same time interval?

A No. I think the price of oil is about where it was in 1940, not much different.

(Go to page 1344.)

R. E. Davis,
Exam. by Dr. Govier.

- 1344 -

Q So that you would attribute all of the increase in gas price to export as such?

A No, I would not go that far, sir. I would say this, that there has been a very, very notable increase in the industrial demand for gas in the Gulf Coast. A great many plants have been built there because of the supply, large supply of low-cost gas, and those plants, some of them, take 100 million cubic feet a day, some take 700,000, and there has been a very great increase in the demand for gas, in what I will now call the home market. And the cities are expanding, so that the gas to people other than manufacturing has increased. Then when you add to that the gas being taken by the lines built since 1940, the Tennessee Gas, Texas Eastern, Texas Gas Transmission, Trans-Continental, Texas-Illinois, you quickly add up and you do know what it will come to, but I cannot offhand state, but those lines I just mentioned would add up to 2 or 3 billion feet a day. And then United Gas Lines, they had a peak day one day, I think it was January, I believe it was January of this year, of 3 billion 200 million cubic feet of gas in one day on one pipe line system, United Gas. All right, when you put all this gas together, Doctor, you have a great demand for gas as compared to 1940, and the result has been a very substantial increase in gas prices.

Q And I suppose it would be almost impossible to say what proportion of the increase was due to export and what proportion due to home growth, or could you figure out what proportion, Mr. Davis?

A I would not know how to figure it, because these things

R. E. Davis,
Exam. by Dr. Govier.

- 1345 -

have happened parallel. The home growth has been growing during the same period that the export growth has been growing, and how much one is responsible as compared to the other I would not know, but it is certain that both are present, both are factors.

Q Mr. Davis, on page 1179 of the transcript for yesterday, right at the top of the page, you say:-

"The estimate of the quantity that seemed sure of realization was called proved."

And then later on is an explanation that you are talking about oil and gas, even though before that you were talking about ore. Can we take that first sentence as your definition of proved?

A Now, that is at page 1179, and where on the page?

Q The first complete sentence?

A At the top of the page?

Q Yes?

A Well, I will say that my definition of proved as contained in that first sentence, which is "The estimate of the quantity that seemed sure of realization", that is what I mean by proved.

Q Here is something that I do not understand, Mr. Davis, if that is your definition, why is it that later on when you are discussing the Viking-Kinsella reserves you introduced into the discussion the question of commercial wells? Surely whether you can drill a commercial well or not over a certain number of cubic feet of gas could not affect whether the gas is proved or not, should not, should it?

A It should from my standpoint. I am talking about gas

R. E. Davis,
Exam. by Dr. Govier.

- 1346 -

that will be taken out, and I am not talking about gas that will stay there. I figure the gas that will be taken out will be taken out because it is commercial. Now, one could go on and find a place, and you could drill wells, yes, all of the way from here to Viking, and if you went down a couple of thousand feet I do not suppose that you could go anywhere without finding a tiny bit of gas, and you would have a gas field all of the way from here to Viking, if you could call it a gas field. A lot of gas is there, but it is not worth anything.

Q Well, then, when you use the word "realization", you really mean within reach of the market?

A I mean gas that is marketable, commercial gas. I would be in an awful fix if I went down to the bankers with a report estimating reserves and they say "Do you mean that this gas will be produced?" "Oh, no, I do not mean that, I just mean it is out there." That would not mean anything to them. They want to know how much gas can be reasonably expected to be produced, and in this business we all know that the other fellow has to make a little money. The fellow who produces the gas has got to make a little money. If he cannot make any money, he will not look for it.

Q And in arriving at this figure, Mr. Davis, am I right that you would do something like this, you would first of all try to figure out how much gas was in the ground, but you would not stop there, you would go on and keep figuring until you figured out how much gas would be taken out of the ground at commercial rates?

A That is right.

R.E. Davis,
Exam.by Dr. Govier.

- 1347 -

Q Is that right?

A That is right.

Q And you get the second figure, the amount that can be taken from out of the ground from the amount that you estimate to be in the ground really by a process or the application of discounts, is that true?

A It could well be.

Q Could be considered that?

A Could be considered so.

Q Yes?

A I might say that I have a beautiful sand, 30% porosity, take the sand in South Louisiana, at 5000 pound pressure, a big thick sand, no shales of any consequence, and I could have a clear conscience and say with regard to that sand "Well, I believe that we will get 95% of that gas if we drill a reasonable number of wells." And then we would go some place else and you would have a dirty sand body, a lot of inter-bedded shale and things, and low porosity, and low permeability, and I would be unhappy to estimate that at over 70 or 75%, just to cover the difference in the formation. A lot of gas there will stay there, and in the other case that would not be so. That is my judgment of it, sir. And what I try to do is to estimate the total amount of gas in the reservoir either by the volumetric pressure or by the pressure decline method, and having figured that, then I arrive at some judgment figure, how much of it are we going to get, and that is based upon a study of many fields, not only those which are projected on to this graph I gave you yesterday. That was just fields that have been

R.E.Davis,
Exam. by Dr.Govier.

- 1348 -

completely depleted, but I have studied a lot of them in addition where they are not merely the final depletion stage to have been put on that graph, but they give me an idea as to what I expect a field to do.

Q Well, I take it, Mr. Davis, where, in any case to your knowledge, there is gas outside of your proven boundary for the Viking-Kinsella field, you are, in effect, assigning it 100% discount, or you are just writing it off entirely, is that right?

A The gas outside of my proven boundary?

Q Yes? There are places that you know where there is some gas?

A Oh, yes.

Q But you say it is not commercial, and, therefore, you discount it 100%?

A I write it off on the theory that there are certain spots within my line where I will be lucky to get anywhere near 75% of the gas. I have got to have the thing in bounds. And, in any case, I do not believe it is of big importance.

Q There is another question, Mr. Davis, and that is in relationship to Exhibit 39, which is your depletion correlation. This chart reflects a summary of the production experienced in some 44 fields, is it, Mr. Davis?

A That is correct.

Q 44 fields?

A Yes.

Q These fields are now abandoned, or substantially abandoned, is that right?

A That is right.

R. E. Davis,
Exam. by Dr. Govier.

- 1349 -

Q I suppose for that reason the figures which you use in arriving at the percentage of withdrawal are figures that represent metered quantities of gas?

A In almost every case. We did have one field in there where there has been a substantial amount of gas that had not been metered. But a study of the relationship between production and pressure decline in that particular period when that gas was not, part of it was not metered, we had a way of calculating with reasonable nicety how much gas was taken out that was not metered.

Q And as far as those figures are concerned, they are quite reliable?

A I did not use any field where I felt the reliability of the data was not good. I could have used some others, but the data was not good.

Q So that these represent a group of 44 fields wherein the quantity of gas, the measure of realization, is actually known today?

A Oh, positively. The only thing that we did there about which you could question our accuracy was after the field had depleted, and that was to estimate how much gas did we leave in the ground.

Q But that should have been a reliable estimate at the time?

A Well, on the average it was about 15% of the total, as we came out with it, and I pointed out in testifying before the Federal Power Commission that I had assumed just for the sake of determining what inaccuracy that might entail, and if I had done a bad job, I assumed that every one of these estimates of the tail-end gas

R. E. Davis,
Exam.by Dr. Govier.

- 1350 -

left in the ground was wrong, that it was 50% wrong
and all on the same side, that there was no balance
one to the other, and I found out that when I did that
I constructed a graph which was the width of a pencil
line down the page, which made a very slight difference.

(Go to page 1351).

Ralph E. Davis,
Exam. by Dr. Govier.

- 1351 -

Q Did you estimate the reserves of gas for any of those fields earlier in their life, any of those same fields, Mr. Davis?

A Yes.

Q Are any of them that you estimated at a time when, oh, say, only five or six per cent of their reserve had been produced?

A I think so, 10 to 20 per cent, maybe.

Q You had an opportunity later to check your estimate?

A That is right.

Q Were you high in any cases? Was your original estimate ever too high in the case of these fields?

A What is that field right close to Monroe, the field southwest of it? Well, in any case, I am sure that my early estimates on a field near the Monroe field were too high.

Q Do you recall by about what amount, Mr. Davis, what percentage?

MR. STEER: Richland.

A No. I am sorry I can not recall that field. I think that most everybody at that time over-estimated that particular field. Generally, Doctor, I think that my estimates on the field was on the average on the low side. For this reason, a great many of these fields had the rock pressure production decline curve coming down the page, the concave upward.

Q You had the same situation with respect to Viking-Kinsella, I take it. That is, there is not enough production pressure history yet to tell whether the line will curve or not curve, is that right?

Ralph E. Davis,
Exam. by Dr. Govier.

- 1352 -

A You remember the old Viking area, our decline curve there ran from 1923 to 1939 at least before we began taking gas from the east, and that line is a near straight line but a slight tendency to curve upward, concave upwards. That illustrates that gas was moving in as the pressure in the centre declined from a greater distance than it had in the first few years.

Q Mr. Davis, getting back to the portion of these 44 fields that you estimated reasonably early in their life, you say on the average you think your estimates turned out to be low?

A Yes.

Q How much low, Mr. Davis, on the average?

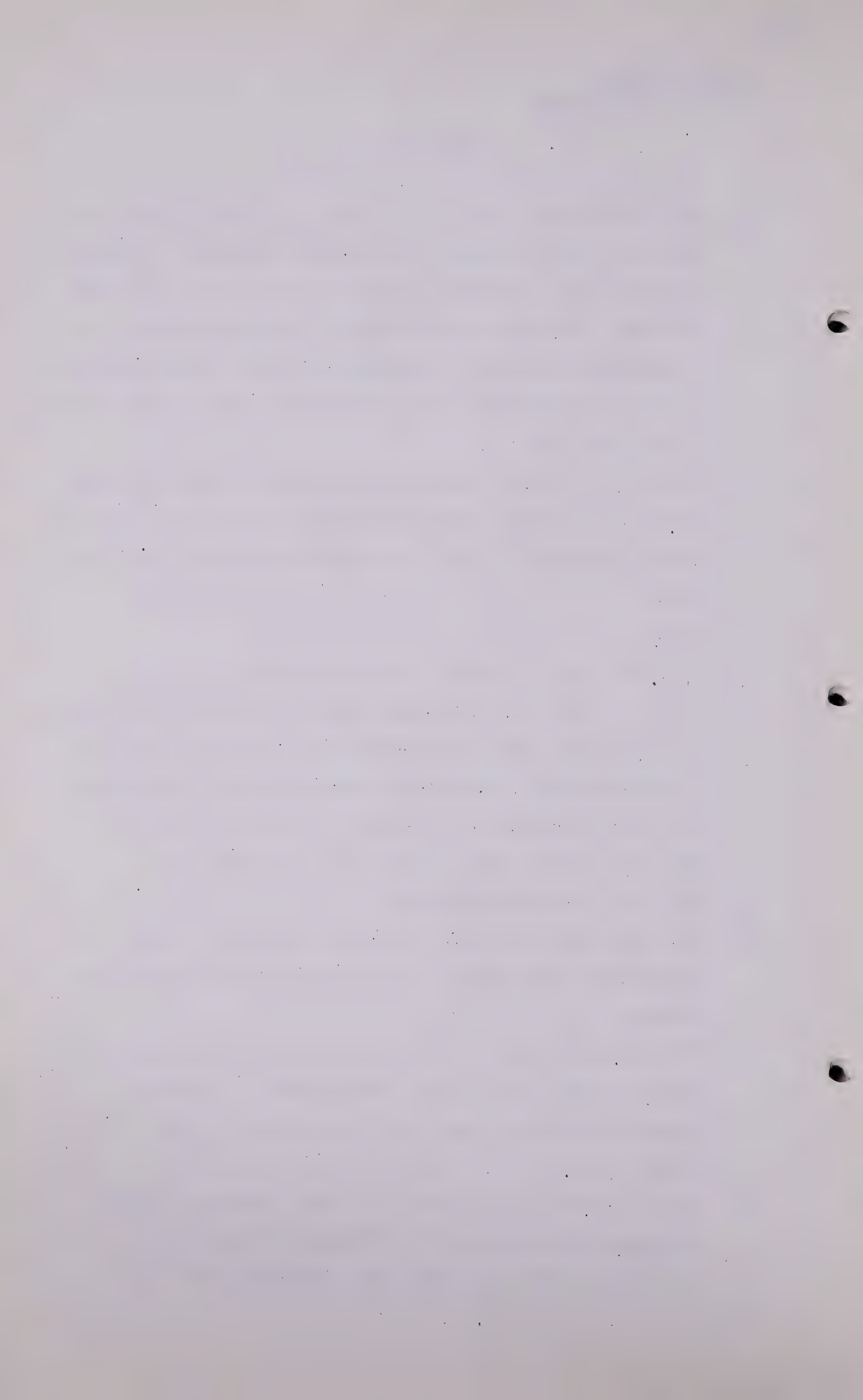
A Well, if I were -- you know, Doctor, you make an estimate of a field in 1933, for example, and you say it has got 60 billion feet. Drilling extends the field and pretty soon you have got twice as big a field and in such a case my estimate would have been 50 per cent low.

Q The same problem in Alberta?

A The same thing here if we consider how much on the average was my estimate low for the thing we were estimating.

Q No, I mean for the field as the field finally turned out, because really that is our problem here in Alberta, I think, Mr. Davis. Take the Viking-Kinsella field, for example.

A Well, I am asking you this, my first estimate of the Panhandle field was made in 1925 and my estimate was 10 trillion feet. At that time we thought the field



Ralph E. Davis,
Exam. by Dr. Govier.

- 1353 -

had about 950,000 acres. I have reviewed this a good many times and I have figures in mind. I thought the field had about 40 feet of porous pay and I thought the porosity would be about 20 per cent, and I ran up my figures. Well, I do not know how many wells have been drilled there but, say, a thousand wells. There are a lot of wells and many of them logs have been taken with care. We now estimate the thickness of the pay at 72 feet. The 40 feet was a guess but a guess on the conservative side. It was better to say 40 and have it turn out 50 than say 40 and have it turn out 30.

Q Mr. Davis, let us confine our attention to these fields among the group of 44 reported on Exhibit 39 which you did estimate, say, during the period of the first of their production, and you have already said that your estimates turned out low on the average?

A Yes.

Q Now, surely you can indicate to us about what percentage they were low on the average? Was it 5 or 50?

A I think, Dr. Govier, it was in the order of about 30 per cent.

Q About 30?

A I think so.

Q On the average. Some of them would have been closer to that?

A Yes.

Q And I suppose some of them might have been further away from that, would have to?

A Well, those fields were extended by drilling further

Ralph E. Davis,
Exam. by Dr. Govier.

- 1354 -

away from that. You asked me to assume that my estimates made when the field was fairly new, and then later extended by drilling?

Q Yes?

A My first estimate is to be compared with what finally turned out there?

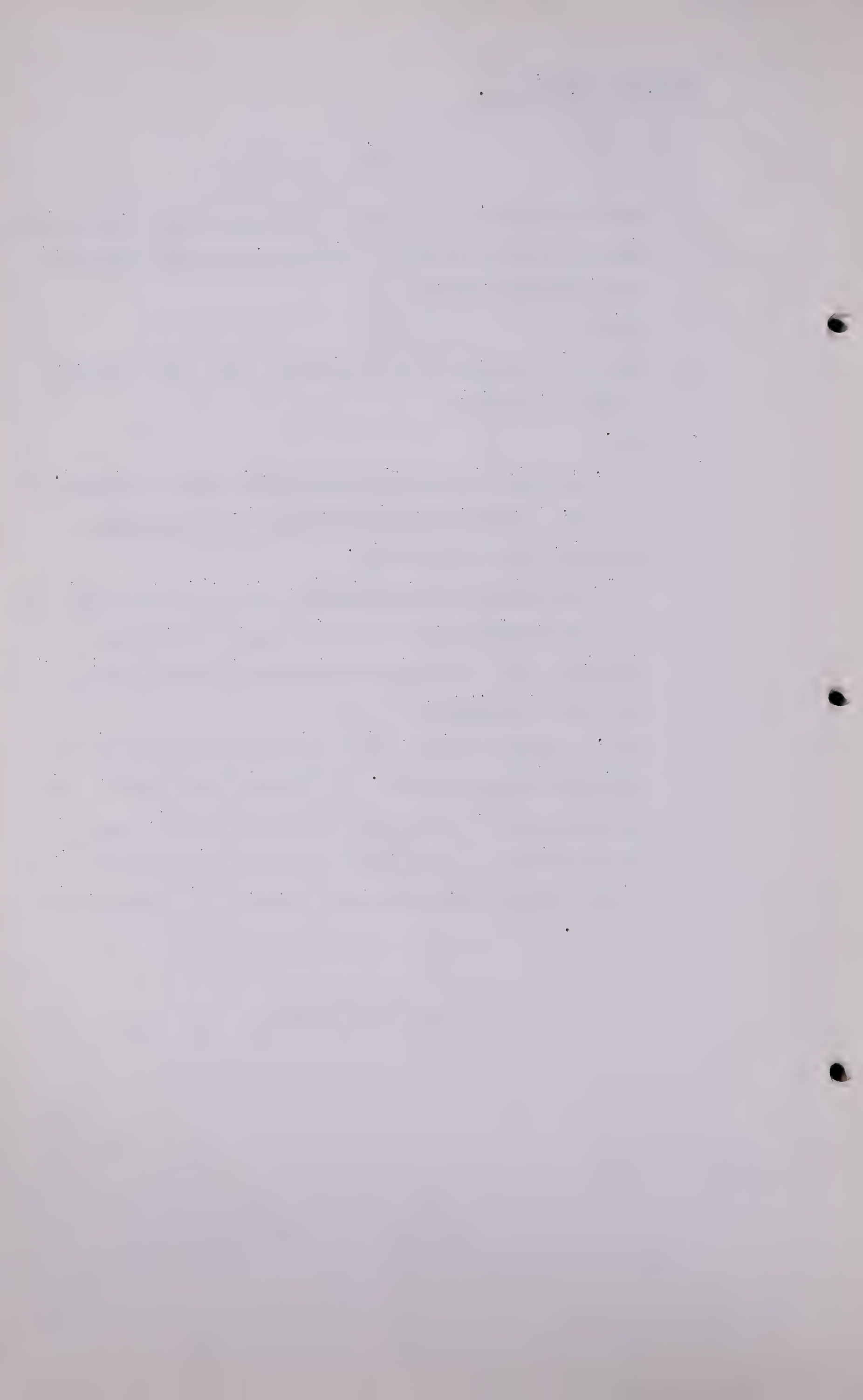
Q Yes.

A Well, I think the over-all difference would be about, I think, I under-estimated on that basis somewhere between 30 and 45 per cent.

Q Is the Viking-Kinsella situation much different than one of these average ones would have been at the time you estimated it? Is there a greater percentage of production or a lesser percentage?

A Well, I think the area of the field is better defined there in Viking-Kinsella. I think we know that we are down to a 2 or 3 foot sand around the border, most of the way around. I do not believe you are going to make money drilling wells in 2-foot sand. I do not believe you are.

(Go to page 1355)



R. E. Davis,
Exam. by Dr. Govier

- 1355 -

Q Mr. Davis, I am going to ask you a nasty question now. Suppose you could project yourself ahead 35 years and include Viking-Kinsella on this, after Viking-Kinsella has been completely produced, and perhaps it is still serving the Town of Viking but that is all. Would you care to hazard a guess as to how conservative your present estimate of Viking-Kinsella might turn out to be on the basis of your records on estimating gas fields and the way you have changed your procedures or have not changed them and so on?

A Well, Dr. Govier, my present feeling is that my estimate of Viking is as high as I want it. I am not too happy about this loss of 8/10 of a foot in average sand thickness as compared to 1948 and 1951. I am not too happy about that. That is a 10% reduction in thickness as revealed by wells presently drilled. We make up some of that, not more than 5% by my willingness to include some additional acreage in what I call proven. I think my figure is as sound as I know how to make one. That is what I think about it.

Q Right now you cannot tell whether it is going to turn out to be another conservative one or one of the few where you actually over-estimated? You cannot tell that now?

A No, I cannot tell for sure.

Q You see the position we are in, Mr. Davis, is that in most cases where you have estimated the reserves and we now know the answer, if in most cases you are on the low side perhaps the Board should take that into account in assessing your estimate of Viking-Kinsella.

R. E. Davis,
Exam. by Dr. Govier.
Exam. by Mr. Steer.

- 1356 -

Do you think we should?

A I do not think so. I think that that estimate - I do not want to get myself in the position of telling you if you thought as well of me as I think of myself, I do not want to get in that spot, but I think I have presented to you the soundest estimate of Kinsella. I think you ought not to change that figure 10% one way or the other without better evidence than you have had.

Q Thank you, Mr. Davis.

Q MR. STEER: I do not know whether you remember this, Mr. Davis, or not, but is it true that in the Madison inquiry when you estimated reserves of Turner Valley, that you were the highest one of the lot?

A For a number of years - it seems to me that for a number of years various estimates were made and I was not the highest one, as I recall it. Wasn't that inquiry made at the time when Dr. Katz was employed by the Board?

Q That is right.

A Well, I remember this, that Dr. Katz got all the estimates together, laid them out on the table. He did not invite me to his conference, he left me out. He got all the rest, took an average of them, and the average set my figure right on the top. That field, by the way, that I was trying to remember was the Richland Field, quite a gas field. Incidentally, the gas field became exhausted and they stopped taking gas out of it, pipe line gas, but there has been a subsequent withdrawal of gas, low-pressure gas, for carbon black uses. It is a field

- 1357 -

which, from a pipe line standpoint was completely depleted, but not from a scientific standpoint. There is a little gas still coming out of it, negligible as compared to totals.

THE CHAIRMAN: Thanks, Mr. Davis. We will adjourn until morning.

(Hearing then adjourned until 9.30 A.M. October 4th, 1951)

which, from a high altitude, was completely
absent. For the first time, the
is a little bit of a change out of the ordinary

compared to others.

There is a small amount of

subject matter.

(The first subject matter is a small amount of)

The Province of Alberta

PETROLEUM AND NATURAL GAS CONSERVATION BOARD

Application for Permission to Remove or cause to be removed
Natural Gas from the Province of Alberta, under the Provisions of the
Gas Resources Preservation Act by Prairie Pipe Lines Limited.

I. N. McKinnon Esq., Chairman

D. P. Goodall Esq.

Dr. G. W. Govier

Session:

Volume_____

